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State capacity & the soft budget constraint: Fiscal federalism, Indian style☆

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ABSTRACT

In this paper, we explore the effects of India's federal structure on state-level fiscal responsibility. Drawing from a 1991–2018 dataset, we argue that higher levels of transfer and borrowing dependence (soft budget constraints) from the central government facilitate lower levels of fiscal responsibility by subnational governments. Our hypothesis is tested using panel regressions on fiscal responsibility outcomes across Indian states. We also evaluate the effects of the world's largest employment program, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), on subnational fiscal responsibility. We find that rural public employment measures are conducive to lower levels of fiscal responsibility. Soft budget constraints constitute a key structural feature of Indian federalism.

1. Introduction

Over the last two to three decades, decentralization and federalism have been treated by the political economy literature as the main solutions to numerous crises confronting the world. On the one hand, decentralization is perceived to be a precondition for democracy, market economy and good governance. On the other hand, there has been a growing concern among policy analysts that decentralization of developing economies may make them more vulnerable to macroeconomic shocks. It has been argued that decentralization in both expenditures and revenues tends to be conducive to overall economic development, while maximizing efficiency. One important aspect of decentralization is the delegation of state capacity from the center to subnational governments. In most federal countries, federal and regional or local governments experience mismatches in their functions and finances. Invariably, federal governments have more revenue sources, whereas subnational governments often depend on intergovernmental transfers to meet their service obligations.

An important feature of an effective system of fiscal federalism is the assignment of sufficient revenue powers to subnational governments so that there is a strong connection between revenues and expenditures. Ideally, the intergovernmental transfers system should ensure that subnational governments have enough resources to raise, which in turn can ensure the perpetuation of hard budget constraints (Rao and Sen, 2011). This is crucial for both efficiency and accountability purposes. Agencies responsible for service provision should have sufficient resources (assuming maximization of their revenue efforts) and resolve to take decisions, while being held responsible for the services that they have to provide.[1] A balanced incentive structure is important for precluding soft budget constraints. Subnational governments often do not take into account overall economic performance, which may have serious ramifications in the form of critical inefficiencies.

In India, gross fiscal deficits witnessed a rise from 1991–92 to 2003–04 followed by a short period of decline from 2004–05 to 2007–08, again rising sharply after that until 2017–18 followed by a small decline in 2018–19. The combined gross fiscal deficits of all states grew at a substantial average growth rate of around 10.50 percent p.a. over the period from 1991–92 to 2018–19. Andhra Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal recorded the highest levels of average gross fiscal deficits for the

☆ The opinions expressed in this paper are those of the authors. They do not purport to reflect the opinions or views of the Ministry of Finance, Government of India, or its members. All remaining errors are ours.

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[1] To realize the optimal benefits of decentralization, it is critical for the increased transfers to be matched by own revenue contributions and to achieve a sense of fiscal discipline. It is also pivotal to ensure that the transfer system does not provide a motivating force to "raid the fiscal commons" or provide perverse incentives (Rao and Sen, 2011).

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entire period of our sample and together accounted for 56.63 percent of total average gross fiscal deficits of all states combined. Notably, two major states, namely Maharashtra and Odisha, also experienced a negative average annual growth rate of gross fiscal deficits during the same period and were also able to decrease their deficits level. All the other states recorded a positive average annual growth rate of gross fiscal deficits. Only a few major states managed to keep the deficit-GSDP (Gross State Domestic Product) ratio below 3 percent and the ratio averaged more than 3 percent for most of the states for the whole period of the study. The combined average transfer dependence of all states fluctuated repeatedly from 1991–92 until 2012–13 but rose sharply after that during the period from 2013–14 to 2018–19. More notably, the average transfer dependence remained high for most of the major states, with, for example, Uttar Pradesh, West Bengal, Rajasthan, Odisha, Madhya Pradesh, and Bihar averaging more than 0.40. The average borrowing dependence of the states declined from 1991–92 to 2009–10, except for a brief rise from 1995–96 to 1998–99, and became stable between 2009–10 and 2018–19 at around 0.18 percent. Of the major states, Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, and West Bengal recorded a high borrowing dependence as compared to others, averaging more than 0.50 percent.

It is not uncommon to observe that several transfer mechanisms produce unintended economic effects. An intergovernmental transfer mechanism, which does not incentivize fiscal discipline and own revenue generation efforts tends to result in fiscal imprudence by subnational governments. This type of transfer system is associated with common pool problems, moral hazard issues and soft budget constraints. Studies, such as Inman and Rubinfeld (1997), Sanguinetti (1994), Rodden (2002), Stein (1999), Wildasin (1997), Willis et al. (1999), and Rodden, Eskeland, and Litvack (2003), have debated these questions. One of the most important studies on the subject was by Purfield (2004), who in her IMF study found that in India during the period 1985–2000 the deterioration of state finances reflects institutional deficiencies rather than structural factors at the subnational level.

In this paper, we examine the determinants of fiscal performance for the period 1991–2018. Research analyzing the effect of decentralization on subnational fiscal performance in India has been based on older datasets comprising specific case studies or only major states. This paper overcomes this limitation by incorporating the most recently available datasets for all Indian states rather than focusing on only the bigger states. We use panel analysis of state-level data and suggest that states which exhibit higher levels of borrowing dependence from the central government tend to be fiscally irresponsible, and therefore reproduce soft budget constraints. Furthermore, the implementation of a nationwide social policy initiative, the MGNREGA program, is associated with higher levels of public spending. This implies that fiscal federalism, Indian style, relies on a cooperative rather than competitive relationship between the federal center and the states, while underscoring the predominance of public spending over revenue collection at the state level. The reference period for this study starts from the year 1990–91, the year India embarked on its large-scale economic reforms. We use the latest available data.[2]

The paper develops as follows. Section II discusses the related literature, while Section III offers an overview of the structure of fiscal federalism in India. Section IV discusses the MGNREGA program, while Section V provides the data and empirical strategy. In Section VI, we report our panel regression and matching results. Section VII concludes.

2. Literature

The logic of Indian fiscal federalism relates to partial decentralization and the role of the federal center as residual provider of state-level services and public goods. At the same time, the mismatch between the control of revenue collection and the fulfillment of spending obligations at the state level (the two thirds-one third rule) perpetuates the provision of soft budget constraints from the central to state budgets. In the context of India's decentralization, Rao (2000) shows that Indian fiscal federalism is characterized by fiscal mismanagement both at the central as well as state level, which thus produces structural deficits at the aggregate level. State governments in India have found indirect ways to soften budget constraints leading to fiscal indiscipline and poor fiscal management (ibid.). Rao (2002) contends that despite the economic reforms of 1991, state governments have failed to take advantage of the opening up of the economy and that there is a lack of competitive federalism in India.

There is a growing body of literature on the economic effects of decentralization with a focus on the disincentives and their impact on subnational fiscal discipline. Weingast et al. (1981) argue that greater decentralization leads to higher deficits. They use theoretical models of electoral competition to contend that central governments have better incentives to maintain fiscal discipline and stability compared to subnational governments. Failure of the central government to commit to impose a hard budget constraint due to deliberate manipulation by state governments have been identified as an important source of fiscal indiscipline as states are able to shift their budgetary pressures onto other states and the center (Ter-Minassian, 1997; Rodden et al., 2003). The continuous expectation of bailout by the central government rewards underperformance in terms of fiscal management and generates disincentives to pursue fiscal discipline by the subnational governments (Inman, 2001).

When decentralization is not associated with enhanced fiscal autonomy at the subnational level, coordination failures may occur between central and regional or local governments (De Mello Jr., 2000). In India, the decentralization of public spending rather than revenue collection generates poor fiscal balance at the subnational level. Fornasari et al. (2000) find that an increase in subnational expenditure and the rise in deficits are positively and statistically significantly associated with growth in expenditure and deficits of the central government. Stein (1999) underscores an exacerbation of the common pool problem due to decentralization in the case of the Latin America. Rajaraman and Vasihstha (2000) analyze the effect of grants on local tax efforts, drawing evidence from rural local governments for the year 1993–94 in the state of Kerala, India. Their study finds a negative impact of expected and invariable lump sum grants on tax revenue efforts of local government bodies (ibid.). Naganathan and Jothi (2000) argues that Indian states face soft budget constraints due to the unclear division of authority and accountability in the federal structure of the country. Sethia (2017) provides evidence of political forces in the composition as well as the distribution of fiscal transfer by the center. He argues that the discretionary grant from the center might be influenced by the alignment between the ruling coalition at the center and the states. Rangarajan and Srivastava (2011) have discussed the theoretical foundations of fiscal transfers in India as well as their practical relevance. Purfield (2004) argues that this deterioration in the state finances is explained by the disincentives generated by the institutional arrangement of India's decentralized fiscal structure.

Rodden (2002) examines the lack of fiscal discipline among subnational governments using cross-nation averages and a panel of forty-three countries comprising the OECD and developing and transition economies during the period 1986–1996. Under the condition of transfers and borrowing dependence of subnational governments, deficits tend to be significant and persistent at the aggregate level (ibid.). Subnational governments practice fiscal discipline, as gauged from their long-term balanced budgets, when they face hard budget constraints (ibid.). Jin et al. (2005) explore decentralization and fiscal incentives in the era of Chinese reforms. Shleifer and Vishny (1998) as well as Zhuravskaya (2000) show that fiscal decentralization in Russia did not

[2] India maintains data in financial year terms i.e. starting from April until the next year's March, and not in terms of calendar year. Therefore, years in this paper are mentioned as 1990-91 and not 1990 or 1991.

prevent the rise of soft budget constraints.

Rodden and Eskeland (2003) argue that the distinction between markets and hierarchies is not valid, with most countries relying on both market and hierarchical constraints to maintain fiscal discipline. Chelliah et al. (1981) study the effect of central transfers on the tax efforts of states and find a negative effect of central transfers on state tax efforts. However, Naganathan and Jothi Sivagnanam (2000) identify a negative and significant effect of the Indian Finance Commission transfers on tax efforts as measured by the revenue-income ratio of the states using data for fourteen states for the period 1970–71 to 1984–85. Moreover, their study finds an insignificant effect of plan grants, but a negative and significant effect of non-plan grants, on the tax efforts of the state. Bajpai and Sachs (1999) argue that there exists no institutional mechanism to reward disciplined fiscal behavior in the form of higher revenue retention by well-performing Indian states.

Khemani (2002) proposes that political connections and integration between the center and state governments matter for higher shares of intergovernmental transfers. Panda (2009) and Panda and Nirmala (2013) examine the impact of central government transfers to state governments on subnational revenue performance for the period 1980–2004 and find a negative effect as well. Despite the incentive provisions indicated by the Finance and Planning Commissions in India, state capacity has not been strengthened in the direction of revenues collection.

Montinola et al. (1995) introduce market-preserving federalism as a critical condition for positive economic performance in China.[3] Unlike first-generation theories of fiscal federalism, second-generation theories (SGT) underscore the significance of incentives generated by subnational tax collection for fostering economic prosperity. Subnational governments raising a major portion of their own revenue are inclined to be more accountable toward citizens, and provide market-enhancing public goods. Thus, SGT underscore the role of revenue generation by subnational governments (Rodden 2002; Singh and Srinivasan 2006; Careaga and Weingast, 2003). It is in the context of second-generation theories that this paper examines the nexus between the transfer dependence and borrowing dependence of Indian subnational governments and its impact on their fiscal behavior. In this paper, we explore the effect of India's federal structure and its associated institutional mechanism on the fiscal behavior of subnational governments. Drawing from the theory of moral hazard and soft budget constraints, we show that central financing of state governments may compromise hard budget constraints, thereby creating a disincentive for the states to control their budget deficits.[4]

3. Structure & tradeoffs of Indian fiscal federalism

India consists of twenty-nine states and seven centrally administered union territories with a quasi-federal system of governance, whose unitary trait sometimes overshadows its federal functions.[5] The Constitution of India outlines the federal system of governance in India by making provision for the division of revenue and expenditure powers among the three levels of government, namely, the central or the union government, the state governments, and finally the local bodies in the form of municipalities or *panchayats*.

Given the partition of 1947 the makers of the Indian Constitution decided to create a strong center as pivotal to the unity of the nation. However, the seeds of modern federalism were sown way back in 1919, as it provided a sharp distinction between the revenue heads of the center and the states. The Government of India Act 1935 was the next principal step towards fiscal federalism when besides the jurisdictional distribution of the revenue, a significant element of sharing and transfer of revenue got introduced. The fiscal arrangement adopted by independent India was, to some extent, the logical extension of the Government of India Act 1935.

Before the introduction of the Goods and Services Tax (GST) in 2017, which gave concurrent powers to both the center and state governments to levy the GST, the allocation of the division of the tax powers among various tiers of government in India was rooted in a principle of separation with a clear distinction between the jurisdiction and role of each level of government to avoid conflict. A wide-ranging number of tax subjects provided under the Union list in the constitution, e.g. income and wealth tax excluding agriculture, custom duties, production tax excluding alcoholic liquors, corporation tax, fall under the ambit of the central government. The states are allocated a large number of tax subjects under the State list of the constitution, of which only the sales tax dominates the state's overall revenues (Singh and Srinivasan, 2006). Apart from the tax subjects mentioned in the Union list and the State list, the constitution also empowers the central government to enjoy authority over the residual list for the items falling neither in the Union nor the State list. At the same time, fiscal decentralization in India relates primarily to the spending assignments of states governments rather than their revenue collection (Rao, 2000). The central government holds control over two thirds of the entire revenue collection, while state governments have to meet two thirds of the overall government expenditures. This mismatch suggests that state governments are primarily dependent on the central transfers, which form a sizeable proportion of the state's total revenue, to meet their expenses. In India, while the center has a larger share of revenue, the states have greater responsibilities, especially in economic and social services. This is a source of vertical imbalance in fiscal management that has to be corrected through tax sharing or through fiscal transfers. The states incur over 60 percent of total government expenditure but their share in revenue collection is just about 40 percent. (Reddy and Venugopal Reddy, 2019).

A distinctive characteristic of India's fiscal federalism is that the center-state transfers are facilitated through multiple agencies, namely the Finance Commission, the Planning Commission and the state equivalents of various ministries bestowed with the responsibility of implementing various central sector projects and centrally sponsored schemes (Singh and Srinivasan, 2006). Fiscal relations in the Indian quasi-federal system have evolved through institutional, political and functional changes within the framework of the different provisions of the Indian Constitution (Rangarajan, 2004).

The Constitution initially provided for only two central taxes – income tax and central excise duties – to be shared with states. However, the states have argued for the fixing of their share of central taxes at a higher level ("Finance Commission of India").[6] In addition to the Finance Commission, the Planning Commission, which was set up by a resolution of the government of India in 1950, was an inherent part of

[3] Von Hayek (1945) argues that local governments have an informational advantage, which facilitates a more efficient provision of public goods and services compared to the national government. Tiebout (1956) states that a better sorting mechanism emerges from inter-jurisdictional competition, which helps to provide a more efficient match of public goods and services with consumer preferences. Musgrave (1959) and Oates (1972) emphasize the proper assignment of taxes and expenditure to various tiers of the government in order to improve welfare. Drawing evidence from German federal fiscal data, Hepp and von Hagen (2012) suggest that redistribution of income and stabilization of asymmetric shocks have constituted key policy outcomes of German federalism between 1970 and 2006, particularly in the aftermath of the German reunification; poorer West German states were the winners of the fiscal equalization reform in 1995.

[4] The common-pool problem may arise under the institutional mechanism of resource sharing with states having little incentive to improve their revenue generation effort and offloading the extra-budgetary requirements onto other states (Purfield, 2004).

[5] This reflects government structure until 5th August 2019.

[6] With the recommendation of 15th Finance Commission, the current tax devolution policy may go through a drastic change with the introduction of the Goods and Services Tax.

fiscal federalism in India and a significant dispenser of planned grants to the states until 2014 when it was abolished and replaced with NITI Aayog. The third channel is related to Centrally Sponsored Schemes (CSSs).

Having discussed the structure and features of India's fiscal federalism, it is pertinent to discuss various drawbacks and concerns highlighted by the literature. When a soft option of receiving the grants is available to the states, there is no incentive for the states to take the politically inconvenient route of increasing their own revenue by levying more taxes or increasing its efficiency. Despite having a framework equipped with stringent authority by the central government to restrict a state's borrowing, usually states do not face a hard budget constraint.

Singh and Srinivasan (2006) assert that the structure of India's fiscal federalism through its role in assigning tax and expenditure jurisdictions produces a significant vertical fiscal imbalance. They highlight that the mismatch between the revenues raised and expenditures incurred by the states is compensated by the grants and loans from the center. Martinez-Vazquez and Rider (2006) raise a similar concern about the inherent imbalance in the system of intergovernmental resource sharing and transfer. They underscore that this fiscal indiscipline among state governments is restricting the Indian economy in realizing its full growth potential despite the introduction of various pro-market economic reforms in the early 1990s.

4. The MGNREGA program

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), also known as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS), is the world's largest public employment generation scheme (Dutta et al., 2014). The MGNREGA program offers a legal guarantee for one hundred days of employment per financial year to rural households. It was introduced with the purpose of alleviating rural poverty by providing employment opportunities to people living below the poverty line.

Moreover, it was enacted in 2005 and implemented from February 2006 in several phases. It covers the rural and partially urban districts of the country and it excludes only those that have an urban population only. The annual budget of the MGNREGA was 610 billion INR in 2018–19.[7] More than 140 million rural households (2018–19) have been registered in the scheme, and they are eligible for work on demand. 124 million people (2019–20) are actively employed in the program and the program has generated 2.3 billion person-days so far (2018–19) since its launch in 2006.[8]

The MGNREGA program is a unique instrument for ensuring inclusive growth in rural India through its impact on social protection, livelihood security, and democratic empowerment.[9] The scale and focus of MGNREGA, including its design, which is bottom-up and people-centered, is distinct and unprecedented. Within MGNREGA, the resource transfer from the center to the states is based on employment demand at the state level. This incentivizes state governments to advance the Act in order to meet the employment needs of the poor.[10]

The Indian Ministry of Rural Development with the assistance of state governments has been supervising the entire planning process. Planning decisions are made at the grassroots level, in open assemblies of the *gram sabha* (GS) and ratified by the *gram panchayat*.[11] All the plans of the gram sabha are consolidated at the block and district level, while the financing of the program is shared between the center and the states at a ratio of 9: 1.[12] The central government bears 100 percent of unskilled labor cost, 75 percent of semi-skilled and skilled labor cost, 75 percent of material costs, and 6 percent of administrative costs. The residual cost is borne by the states. Based on the previously policy framework, we introduce the following hypotheses for our quantitative analysis:

Hypothesis 1. Indian states that exhibit a higher degree of transfer and borrowing dependence from the central government are likely to have larger fiscal deficits.

Hypothesis 2. Indian states that are more effective in the implementation of rural public employment measures under the auspices of the MGNREGA program are likely to have larger fiscal deficits.

In our first hypothesis, we test the presence of soft budget constraints in the Indian federal system by underscoring the role of transfer and borrowing dependence as disincentives toward subnational fiscal discipline. The second hypothesis constitutes a special case of the first one: the MGNREGA program provides strong incentives for spending to state governments while achieving concrete social policy targets set by the federal government. Hence, the provision of soft budget constraints may not necessary undermine subnational state capacity; on the contrary, this hypothesis may corroborate the cooperative nature of Indian federalism.

5. Data & methodology

5.1. Data

The primary data source used in the study is the 'Finances of State Governments' dataset available with the EPWRF India time series database, which is principally sourced from the Reserve Bank of India's (RBI) annual study of state finances in India.[13] The present study covers all the twenty-nine states and two major union territories (UT), namely, Delhi and Puducherry, over the period 1991–92 to 2018–19.[14] The dataset constitutes an unbalanced panel of thirty-one states and UTs with a total of 770 observations and the number of observations per state ranging from five to twenty-eight years.[15] The key variables used in the study include state fiscal deficit, aggregate expenditure, grants from the center, share in central taxes, revenue receipts, loans from the center, as

[7] Government of India, Press release, retrieved on 10.01.2020 from https://pib.gov.in/newsite/PrintRelease.aspx?relid=187508.

[8] Ministry of Rural Development, Government of India, retrieved on 10.01.2020 from http://mnregaweb4.nic.in/netnrega/all_lvl_details_dashboard_new.aspx; Government of India, Press release, retrieved on 10.01.2020 from https://pib.gov.in/newsite/PrintRelease.aspx?relid=187508.

[9] FAQ released by Ministry of Rural Development, Government of India retrieved on 10.01.2020 from https://nrega.nic.in/Circular_Archive/archive/nrega_doc_FAQs.pdf.

[10] Government of Meghalaya, State Rural Employment Society retrieved on 10.01.2020 from http://megsres.nic.in/objective-nrega.

[11] FAQ released by Ministry of Rural Development, Government of India retrieved on 10.01.2020 from https://nrega.nic.in/Circular_Archive/archive/nrega_doc_FAQs.pdf.

[12] *Work on demand* is linked to the objective of the MGNREGA to provide a minimum of 100 days of guaranteed wage employment per financial year to every rural household whose adult members are willing to do unskilled manual work. G*ram Sabha (GS)* is the general assembly of all the people in a village, who are above 18 years old and have the right to vote. *Gram Panchayat (GP)* is the executive committee of the Gram Sabha, which is composed of the representatives elected by the Sabha.

[13] EPWRF stands for Economic and Political Weekly Research Foundation.

[14] The union territories of Andaman and Nicobar Islands, Dadra and Nagar Haveli, Chandigarh, Daman and Diu, and Lakshadweep are not included in the study due to lack of data availability.

[15] Some of the states, such as Jharkhand, Chhattisgarh, Uttarakhand, and Telangana, were formed in a later year than 1991. Also, the data for some of the years for a few other states were not available consistently throughout the time period covered in the study, i.e. 1991-92 to 2018-19. Base years: 1980-81, 1993-94, 1999-00, 2004-05, and 2011-12 series.

Table 1
Data description and sources.

Variable	Unit	Period	Data source
Receipt and Expenditure (Aggregate, Capital, Revenue)	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Deficit (Fiscal, Revenue, Capital, Primary, Gross)	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Liabilities	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Tax and non-tax Revenue (Total, Own revenue)	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Grants from Center	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Development and Non-Development Expenditure	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Loans from Center	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
GDP Base	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Agriculture SGDP	Indian Rupees (in 100 K)	1991–92 to 2018–2019	EPWRF India time series
Population	Count in thousands	1991–92 to 2018–2019	EPWRF India time series
Poverty	Dummy	2016	Handbook of State Statistics, National Institution for Transforming India (NITI) Aayog
Aging	Dummy	2011	Elderly in India 2011 Census report

Note: Loans are flow data, whereas liabilities are stock data. The reported values in Indian Rupees are nominal (a correction for inflation would not lead to a significant change in results).

well as revenue expenditure. Data on central government fiscal deficit, revenue receipts, and revenue expenditure has been obtained from the EPWRF's 'Combined Government Finances' statistics (Table 1). Other variables obtained from the same source include state-level GDP (GSDP), population, and agricultural share. GSDP and agricultural share data are available for different base year series for the period covered in the study and, hence, data for these two indicators are spliced with the latest 2011–12 series for all the years covered.[16] Furthermore, data on the state-wise poverty headcount ratio and share of the aging population have been obtained from the Handbook of State Statistics, National Institution for Transforming India (NITI) Aayog website and GOI (2016) Elderly in India 2011 Census report, respectively.

Fig. 1 depicts the trends in gross fiscal deficits, total expenditure, and gross fiscal deficit as a percentage of total expenditure for all states combined during the period 1991–2018. Gross fiscal deficits witnessed a rise from 1991 to 2003 followed by a short period of decline between 2004 and 2007, again rising sharply after that until 2017. The total combined expenditure for all states rose sharply throughout the period from 1991 to 2018 at an annual average growth rate of 12.05 percent. Gross fiscal deficits as a percentage of total expenditure fluctuated during the same period, rising from 17.50% in 1991–92 to 29.14% in 1999–2000, followed by a decline to 10.06% in 2007–08, rising again to 16.00 percent in 2017–18, and remaining at 13.53 percent in 2018–19 at the end of the period. The combined gross fiscal deficits of all states increased from around 189 billion rupees in 1991–92 to about 4900 billion rupees in 2018–19, reaching a maximum of 5359 billion rupees in the year 2016–17. The combined gross fiscal deficits of all states grew at a substantial average rate of around 10.50% p.a. over the period from 1991–92 to 2018–19. Table 2 reports the state-level average level of gross fiscal deficits, the average annual growth rate of gross fiscal deficits, and the average ratio of gross fiscal deficits to total expenditure and to gross state domestic product for the period from 1991–92 to 2018–19. Andhra Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal recorded the highest levels of average gross fiscal deficits for the entire period of the paper and together accounted for 56.63% of total average gross fiscal deficits of all states combined. Smaller states such as Arunachal Pradesh, Assam, Chhattisgarh, Jammu and Kashmir, Manipur, and Tripura recorded a negative average annual growth rate in gross fiscal deficits during the period from 1991–92 to 2018–19.

Notably, two major states, namely Maharashtra and Odisha, also experienced a negative average annual growth rate of gross fiscal deficits during the same period and were also able to decrease their deficits level. All the other states recorded a positive average annual growth rate of gross fiscal deficits with Himachal Pradesh, Telangana, Uttarakhand, Meghalaya, and Mizoram recording the highest growth rates. Among significant states, Rajasthan, Punjab, Gujarat, Bihar, Jharkhand, Tamil Nadu, and Madhya Pradesh recorded a high growth rate of gross fiscal deficits averaging more than 18 percent per annum. The average gross fiscal deficits to total expenditure ranged from a low of 0.06 for Arunachal Pradesh to a high of 0.26 for West Bengal.

The ratio of gross fiscal deficits to total expenditure for other bigger states, such as Uttar Pradesh, Tamil Nadu, Rajasthan, Punjab, Maharashtra, Karnataka, Gujarat, Haryana, and Andhra Pradesh also remained high, averaging more than 0.15 for the entire period. Gross fiscal deficits as a percentage of GSDP ranged from less than 1% for Delhi to 6.51% for Mizoram. Among significant states, only a few, Gujarat, Karnataka, Haryana, Madhya Pradesh, Odisha, and Tamil Nadu, managed to keep the ratio below 3%. The ratio for the rest of the major states averaged more than 3% for the entire period.

The average transfer dependence of all states combined fluctuated repeatedly from 1991–92 until 2012–13 but rose sharply after that during the period from 2013–14 to 2018–19, as indicated in Fig. 2. This figure also shows that the average borrowing dependence of the states, as measured by BD1 and BD2, declined from 1991–92 to 2009–10, except for a brief period of rising from 1995–96 to 1998–99, and became stable post-2009–10 until 2018–19 at around 0.18 percent.[17] Table 3 reports the state-level average transfer and borrowing dependence for the period from 1991–92 to 2018–19. The average transfer dependence of states ranged from a low of 0.06 for Puducherry and 0.08 for Delhi to a high of 0.91 for Mizoram and Nagaland. As it is observed in Table 3, the average transfer dependence remained high for most of the major states, e.g. averaging more than 0.40 for Uttar Pradesh, West Bengal, Rajasthan, Odisha, Madhya Pradesh, and Bihar.

Interestingly, few significant states recorded a lower average transfer dependence: Gujarat, Haryana, Madhya Pradesh, Karnataka, Kerala, Maharashtra, Punjab, and Tamil Nadu averaged less than 0.30. Average borrowing dependence remained positive for all the states except Uttarakhand and Chhattisgarh, which experienced a net negative average borrowing dependence from the center for the entire period. Average BD1 remained less than 1 percent for all states except Bihar's 1.01 percent. Among the major states, Andhra Pradesh, Madhya Pradesh, Uttar Pradesh, and West Bengal recorded a high borrowing dependence as compared to others averaging more than 0.50 percent. The average BD2 for Bihar, Delhi, Odisha, Uttar Pradesh, and West

[16] Base years: 1980-81, 1993-94, 1999-00, 2004-05, and 2011-12 series.

[17] Transfer Dependence (TD) denotes the ratio of grants sum plus state share in central taxes to total revenue receipts of the state. Borrowing dependence (BD) is shown by the ratio of loans from the center to the state's GPD (BD1) or by the ratio of loans from the center to the state's expenditure (BD2).

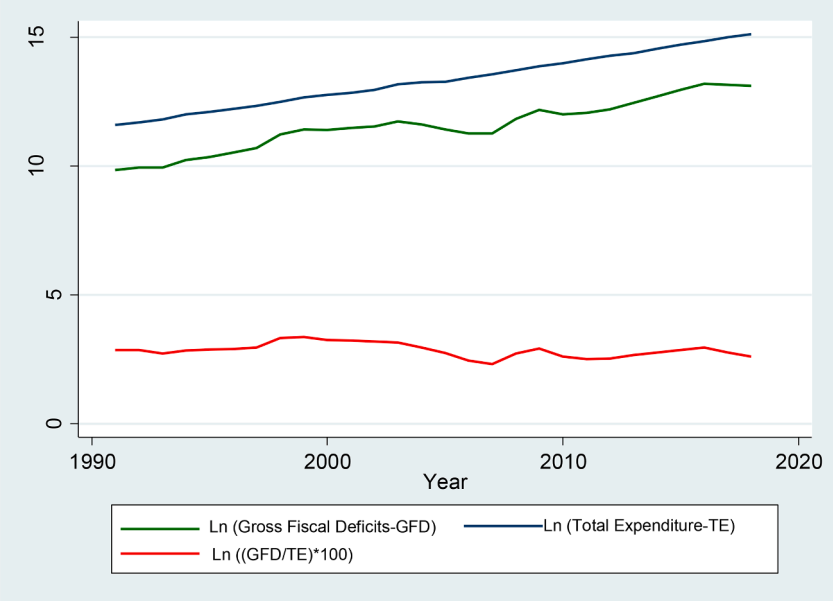

Fig. 1. Trends in Gross Fiscal Deficits (GFD) and Total Expenditure (TE) in India, 1991–92 to 2018–19.
Source: Authors' Calculation.

Table 2
State-level average gross fiscal deficits (GFD), average annual growth of GFD, and GFD as a percentage of total expenditure and gross state domestic product.

States	Average Gross Fiscal Deficits (in million Rs)	Average Growth Rate of Deficits	Average GFD to Expenditure ratio	Average GFD to GSDP ratio
Andhra Pradesh	110,977.5	16.46	0.173	0.047
Arunachal Pradesh	1851.4	−72.70	0.062	0.048
Assam	27,132.5	−184.63	0.083	0.018
Bihar	58,420.00	23.60	0.148	0.036
Chhattisgarh	28,494.2	−134.59	0.086	0.017
Delhi	13,732.7	4.56	0.118	0.010
Goa	7857.5	25.12	0.161	0.030
Gujarat	97,011.4	17.85	0.191	0.027
Haryana	63,262.1	2.20	0.175	0.025
Himachal Pradesh	21,599.3	62.40	0.188	0.045
Jammu and Kashmir	24,036.1	−341.55	0.111	0.039
Jharkhand	47,810.6	28.28	0.185	0.033
Karnataka	97,257.1	17.73	0.163	0.021
Kerala	81,771.4	15.95	0.224	0.032
Madhya Pradesh	70,328.6	18.67	0.147	0.030
Maharashtra	162,681.4	−10.59	0.178	0.022
Manipur	3136.1	−21.99	0.096	0.045
Meghalaya	3516.4	39.01	0.105	0.027
Mizoram	2624.3	55.92	0.111	0.065
Nagaland	3631.1	23.20	0.117	0.057
Odisha	31,233.9	−3.92	0.142	0.025
Puducherry	5057.1	14.65	0.122	0.027
Punjab	78,570.0	18.53	0.239	0.040
Rajasthan	107,072.5	25.66	0.201	0.034
Sikkim	1565.4	9.94	0.063	0.035
Tamil Nadu	125,733.9	21.69	0.160	0.022
Telangana	231,420.00	44.24	0.192	0.032
Tripura	4755.4	−57.63	0.090	0.033
Uttar Pradesh	176,695.4	14.33	0.195	0.038
Uttarakhand	27,272.6	37.33	0.170	0.027
West Bengal	132,605.7	15.29	0.262	0.036

Source: Authors' Own Calculation.

Bengal were higher than the rest, averaging more than 3 percent. The trend growth rate of the central government's gross fiscal deficits and the ratio of gross fiscal deficits to expenditure during the period from 1991–92 to 2018–19 are reported in Fig. 3. The growth rate of the central government's gross fiscal deficits fluctuated rapidly throughout the period reaching a maximum growth rate of about 97 percent in the year 2008–09. The gross fiscal deficits of the central government at the beginning of the period in 1991–92 stood at 363 billion rupees and rose to 6343 billion rupees by the end of the period in 2018–19. The ratio of the center's gross fiscal deficits to expenditure also fluctuated rapidly throughout the period and declined to 0.25 at the end of the period in 2018–19, as compared to the value of 0.32 in 1991–92.

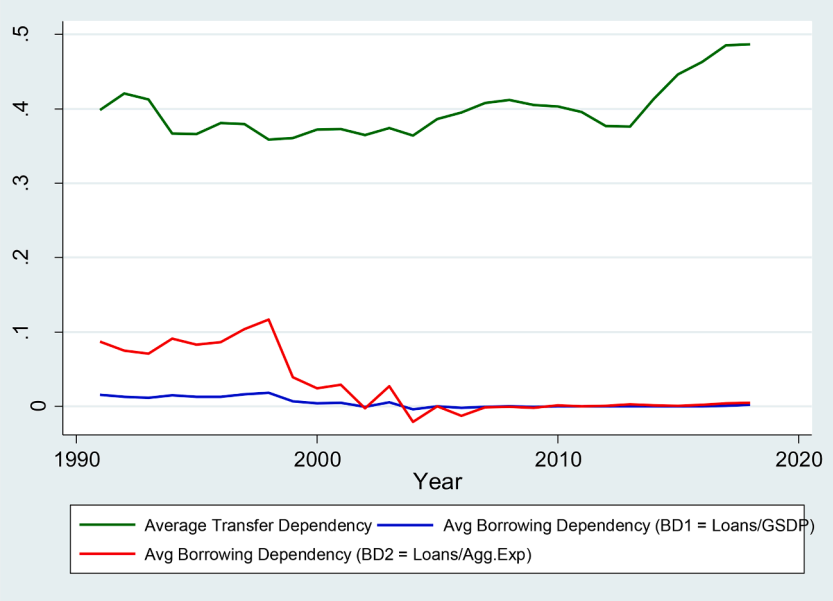

Fig. 2. Trends in average transfer and borrowing dependence of states during the period from 1991 to 92 to 2018–19.
Source: Authors' Calculation.

Table 3
State-level transfer and borrowing dependence in India, 1991–2018.

States	Average TD	Average BD1	Average BD2
Andhra Pradesh	0.3538	0.0088	0.0311
Arunachal Pradesh	0.8756	0.0048	0.0097
Assam	0.6579	0.0004	0.0033
Bihar	0.6934	0.0101	0.0384
Chhattisgarh	0.4447	0.0000	−0.0012
Delhi	0.0808	0.0035	0.0488
Goa	0.1812	0.0034	0.0165
Gujarat	0.2209	0.0045	0.0272
Haryana	0.1643	0.0034	0.0189
Himachal Pradesh	0.6452	0.0066	0.0231
Jammu & Kashmir	0.7848	0.0050	0.0141
Jharkhand	0.5428	0.0009	0.0054
Karnataka	0.2793	0.0037	0.0284
Kerala	0.2806	0.0034	0.0236
Madhya Pradesh	0.4505	0.0058	0.0280
Maharashtra	0.1954	0.0028	0.0226
Manipur	0.9103	0.0045	0.0114
Meghalaya	0.8032	0.0025	0.0094
Mizoram	0.9162	0.0062	0.0094
Nagaland	0.9167	0.0052	0.0084
Odisha	0.5534	0.0061	0.0324
Puducherry	0.0600	0.0033	0.0117
Punjab	0.1873	0.0048	0.0288
Rajasthan	0.4167	0.0048	0.0269
Sikkim	0.4961	0.0070	0.0067
Tamil Nadu	0.2659	0.0032	0.0231
Telangana	0.3225	0.0006	0.0035
Tripura	0.8655	0.0044	0.0106
Uttar Pradesh	0.5183	0.0061	0.0340
Uttarakhand	0.5371	−0.0027	−0.0089
West Bengal	0.4883	0.0070	0.0494

Source: Authors' Own Calculation.

5.2. Methodology

We introduce a fixed effects panel regression model to examine the effect of higher transfer and borrowing dependence on the fiscal performance of states:

$$FP_{s,t} = \alpha + \beta_1 TD_{s,t} + \beta_2 BD_{s,t} + \beta_3 EF_{s,t} + \beta_4 RF_{s,t} + (control\,\text{var}\,iables)_{i,s}\gamma^T + \alpha_s + \eta_t + \varepsilon_{s,t}$$

where fiscal performance (FP) denotes the ratio of fiscal deficit to aggregate expenditure of a state, transfer dependence (TD) denotes the ratio of grants sum plus state share in central taxes to total revenue receipts of the state. Borrowing dependence (BD) is shown by the ratio of loans from the center to the state's baseline GDP (BD1) or to the state's expenditure (BD2). Loans carry interest rate and they have to be repaid within a certain period of time. In some cases, loans or interest revenues are waived by the center and in favor of the respective state. Nevertheless, these cases constitute a very small percentage of the total loans provided. Expenditure federalism (EF) denotes the degree of institutional dependence of state governments on the center in the form of expenditures, i.e. the ratio of state to central expenditure, while revenue federalism (RF) the ratio of state to central revenue receipts. Controls include agricultural share, population, and poverty dummy, where a value of 1 indicates states with a poverty share less than the federal median, and 0 otherwise.[18] Moreover, aging is a dummy variable with a value of 1 for states where the share of old-age population is above the federal median, and 0 otherwise.[19] α and η control for state and time effects, while ε denotes the purely idiosyncratic error term.[20]

The main objective of the paper is to study the effect of India's federal structure on the fiscal behavior of subnational governments. The hypothesis tested here is that the subnational governments tend to be fiscally more irresponsible when they are highly dependent on the central government for revenue and financing of public spending decisions. Furthermore, we suggest that moral hazard and the common-pool problem contribute to the persistence of soft budget constraints in intergovernmental relations. Thus, we emphasize the role of institutional factors in creating disincentives for responsible fiscal behavior at

[18] Tendulkar Committee Poverty estimates for the year 2011-12 are used in the construction of the variable.

[19] Based on the 2011 population Census of India.

[20] The Finance Commission (Central authority) decides on grants-in-aid transfers from the center to states. Per recommendations of the 14th Finance Commission grants-in-aid constitute 12% of central transfers to states. The 14th Finance Commission had suggested the provision of grants to states for the following purposes: (i) disaster relief, (ii) local bodies, and (iii) revenue deficit. State Governments can borrow within the framework of Fiscal Responsibility Management (FRBM) Act. States are not allowed to borrow beyond a certain limit (3%) as per the FRBM Act.

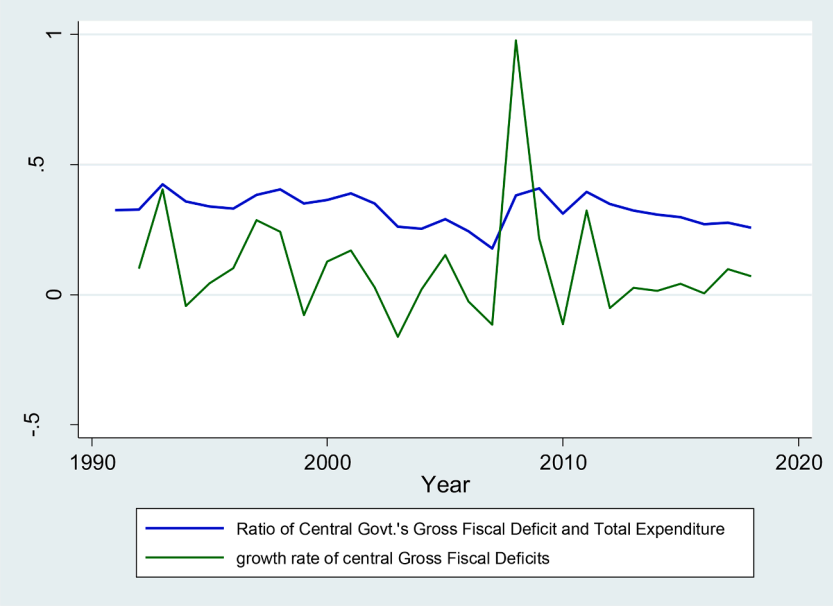

Fig. 3. Central Government Gross Fiscal Deficits (GFD) growth rate and GFD to expenditure ratio.
Source: Authors' Calculation.

lower levels of governments.

To delineate the effects of the MGNREGA program on fiscal performance, we estimate the average treatment effect (ATT) based on the Leuven and Sianesi method (2003) of propensity score matching (psmatch2). To disentangle the core of the MGNREGA program, we use several variables that capture the degree of its implementation by Indian states. These variables include female employment in absolute numbers and in percentage of overall employment, creation of useful livelihood assets, average person days per household, overall person days, timely payments to laborers, issuance of household job cards, wages, and public employment provided to households. We construct the treatment variables by including those states that performed above the median value of each MGNREGA measure in the treatment group. Similarly, we include those Indian states that performed below the median value of the respective measure in the control group. In this way, we explore whether MGNREGA implementation leads to higher levels of fiscal performance

Table 4
OLS Model – Soft Budget Constraints & Fiscal Responsibility.

Variables	−1 FE	−2 RE	−3 FE	−4 RE	−5 FE	−6 RE	−7 FE	−8 RE
Transfer Dependence	0.037	−0.024	0.034	−0.016	−0.000	0.0001	−0.000	0.000
	−0.052	−0.032	−0.048	−0.029	(0.000)	(0.0001)	(0.000)	(0.000)
Borrowing Dependence (1)	1.322***	1.389***			0.005***	0.004***		
	(0.286)	(0.277)			(0.001)	(0.001)		
Borrowing Dependence (2)			0.307***	0.335***			0.001	0.000
			(0.076)	(0.071)			(0.000)	(0.000)
Ratio of State to Center Revenue Expenditure	4.181***	4.749***	4.186***	4.684***	0.010***	0.010***	0.010***	0.010***
	(1.081)	(1.041)	(1.104)	(1.053)	(0.003)	(0.003)	(0.003)	(0.003)
Ratio of State to Center Revenue Receipts	−4.059***	−4.007***	−3.991***	−3.933***	−0.007***	−0.007***	−0.007***	0.007**
	(0.921)	(0.915)	(0.924)	(0.917)	(0.002)	(0.002)	(0.002)	(0.002)
Agricultural Share	−0.097	−0.020	−0.115	−0.0325	−0.001	−0.000	−0.000	−0.000
	(0.092)	(0.049)	(0.094)	(0.049)	(0.000)	(0.000)	(0.000)	(0.000)
Population	−0.046	.0169***	−0.044	0.016***	−0.000	−0.000**	−0.000	−0.000***
	(0.034)	(0.006)	(−0.032)	(−0.006)	(0.000)	(0.000)	(0.000)	(0.000)
Poverty	–	−0.012	–	−0.013	–	−0.000**	–	−0.000**
		(0.010)		(0.010)		(0.000)	(0.000)	
Aging	–	0.023*	–	0.024*	–	−0.000	–	−0.000
		(0.013)		(0.013)		(0.000)	(0.000)	
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.632*	0.008	0.608*	0.014	0.002	0.001***	0.002	0.001***
	(0.336)	(0.060)	(0.320)	(0.053)	(0.001)	(0.000)	(0.002)	(0.000)
Observations	760	760	760	760	760	760	760	760
R-squared	0.031	0.388	0.025	0.388	0.064	0.219	0.052	0.192
Number of States	31	31	31	31	31	31	31	31
Sargan-Hansen Statistic(Fixed vs. Random Effects)		15.760**		13.313**		7.096		5.472

*** $p<0.01$.
** $p<0.05$.
* $p<0.1$.
Note: Robust standard errors in parentheses.
In specifications 1–4, the dependent variable is the ratio of a state's fiscal deficit to total expenditure. In specifications 5–8, the dependent variable is the ratio of a state's fiscal deficit to its gross domestic product.

at the state level. The problem of selection bias is addressed with the performance of Rosenbaum bounds tests, which measure the impact of omitted variables on the significance levels of the average treatment effects (ATT). That way, we contribute to the discussion on causal inference by extrapolating the hidden bias (Γ) of unobservable variables on the basis of the effect generated by the observable ones (Rosenbaum 2002a, 2002b).

6. Results

Table 4 presents the panel data regression results both with fixed (FE) and random (RE) effects. The fixed effects specifications (1) and (3) suggest that transfer dependence is not statistically significant and therefore does not have any predictive power in explaining state-level fiscal performance. Nevertheless, borrowing dependence as the ratio of loans from the center to baseline GDP at the state level is positive and statistically significant at the 1-percent level in specification (1). The same observation holds for borrowing dependence as the ratio of loans from the center over total state expenditure. Hence, our first hypothesis is confirmed with respect to borrowing dependence, but it has not been corroborated with respect to transfer dependence. Our random effects estimations in specifications (2) and (4) lead us to similar results: either definition of borrowing dependence is a powerful predictor of fiscal performance, whereas transfer dependence is not. Furthermore, in all first four specifications, the ratio of state to center revenue expenditure is positively associated with higher fiscal deficits and is statistically significant at the 1-percent level. Similarly, the ratio of state to center revenue receipts is negatively associated with lower levels of fiscal performance and it also statistically significant at the 1-percent level. State-level population is conducive to lower levels of fiscal performance – whereas aging to higher ones - only in random effects specifications (2) and (4).

The deficit-GSDP ratio is the dependent variable in specifications (5)-(8). Transfer dependence remains insignificant. Borrowing dependence in the form of loans over baseline GDP at the state level is positive and significant at the 1-percent level; however, borrowing dependence in the form of loans over total expenditure at the state level is statistically insignificant. As in specifications (1)-(4), the ratio of state to center revenue expenditure and the ratio of state to center revenue receipts are statistically significant at the 1-percent level also in specifications (5)-(8), while pointing in opposite directions when it comes to their effect on fiscal performance. Overall, the population effect on fiscal performance

Table 5
MGNREGA fulfillment and fiscal performance (Propensity Score Matching).

Panel A. Dep. Variable: State's fiscal deficit to total expenditure Treatment	ATT	No of Treated	No of Control	N	Matching Algorithm	Critical Level of Hidden Bias (Γ)
Creation of Useful Assets	0.030*** (3.39)	582	178	760	Nearest neighbor matching	77.00
HH Job Card	0.013 (0.85)	676	84	760	Nearest neighbor matching	77.00
Timely Payment	−0.000 (−0.00)	694	66	760	Nearest neighbor matching	77.00
Wages	0.035** (2.48)	675	85	760	Nearest neighbor matching	77.00
Person Days	0.017 (1.22)	676	84	760	Nearest neighbor matching	77.00
Average Person Day HH	0.001 (0.06)	673	87	760	Nearest neighbor matching	77.00
HH Provided Employment	0.000 (0.00)	677	83	760	Nearest neighbor matching	77.00
Female Employment	0.008 (0.54)	675	85	760	Nearest neighbor matching	77.00
Female Employment%	0.012 (1.18)	652	108	760	Nearest neighbor matching	77.00
Panel B. Dep. Variable: State's fiscal deficit to its gross domestic product						
	ATT	No of Treated	No of Control	N	Matching Algorithm	
Creation of Useful Assets	0.000*** (3.02)	582	178	760	Nearest neighbor matching	51.30
HH Job Card	0.000** (2.20)	676	84	760	Nearest neighbor matching	51.30
Timely Payment	0.000 (0.76)	694	66	760	Nearest neighbor matching	51.30
Wages	0.000** (2.29)	675	85	760	Nearest neighbor matching	51.30
Person Days	0.000* (1.84)	676	84	760	Nearest neighbor matching	51.30
Average Person Day HH	0.000 (0.36)	673	87	760	Nearest neighbor matching	51.30
HH Provided Employment	−0.000 (−1.57)	677	83	760	Nearest neighbor matching	51.30
Female Employment	0.000* (1.71)	675	85	760	Nearest neighbor matching	51.30
Female Employment%	0.000** (2.14)	652	108	760	Nearest neighbor matching	51.30

*** Note: Significance levels: $p<0.01$.
** $p<0.05$.
* $p<0.1$.
t-values are in parentheses. NNM=1 without replacement. Common support is imposed. Covariates include transfer dependence, borrowing dependence (1), ratio of state to center revenue expenditure, ratio of state to center revenue receipts, agricultural share, population, poverty, and aging dummies.

is ambiguous: while statistically significant at the 5-percent level, it is now negative. Poverty also appears to be a negative and statistically significant parameter at the 5-percent level only in random effects specifications (6) and (8).

We perform for all four specification pairs (fixed vs. random effects) a Sargan-Hansen test using the Stata command *xtoverid*. A statistically significant test result suggests that the fixed effects model is more efficient than the random effects one. In our first two specification pairs (specifications 1–4), the fixed effects model is preferred, as in both cases the Sargan-Hansen statistic is statistically significant at the 5-percent level. However, in our last two specification pairs (specifications 5–8), the Sargan-Hansen test result is not statistically significant. This implies that the random effects model is preferred to the fixed effects model. The magnitude of the borrowing dependence coefficient in specification 1, where it is defined as the ratio of loans from the center over state-level GDP, is much larger than the magnitude of the borrowing dependence coefficient in specification 3, where it is defined as the ratio of loans from the center over total state expenditure; an 1-percentage-point

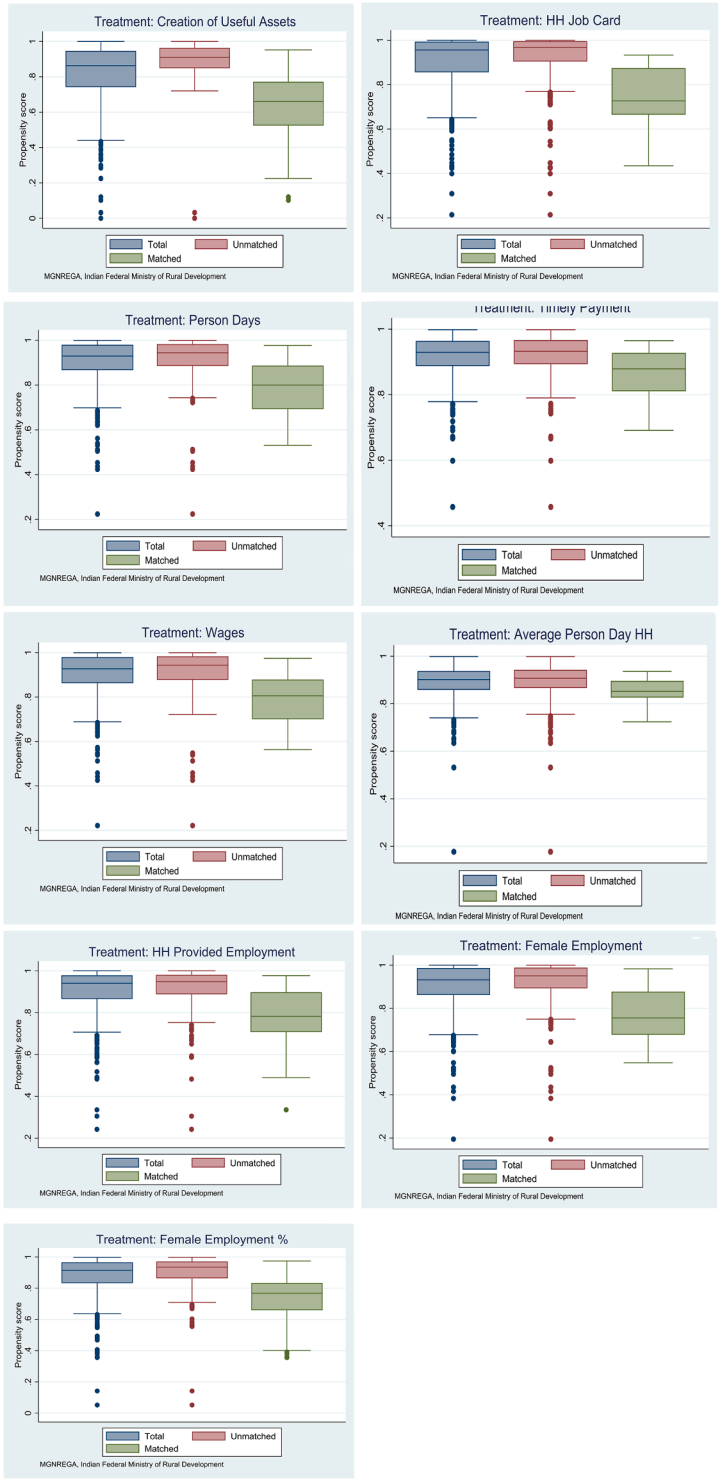

Fig. 4. Common support box plots (Dep. Var.: State's fiscal deficit to total expenditure).

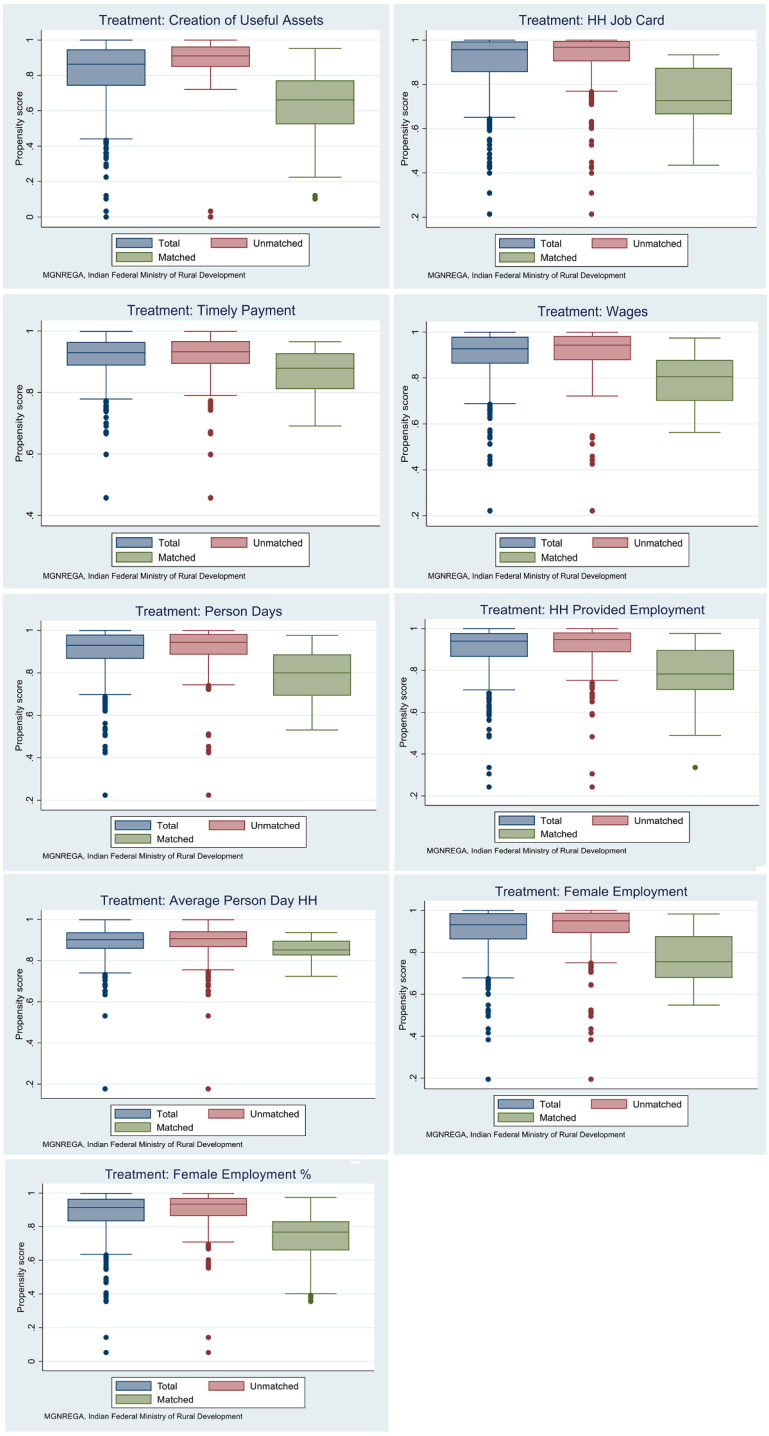

Fig. 5. Common support box plots (Dep. Var.: State's fiscal deficit to its gross domestic product).

increase in borrowing dependence (BD1) leads to an 1.322 percentage-point-increase in fiscal deficit (deficit over expenditure) at the state-level, which is a much larger effect compared to the 0.307 percentage-point-increase, when the definition of borrowing dependence changes (BD2). This difference in magnitude may also be explained by the role of state-level expenditure as the denominator of both BD1 and FP in specifications (1)-(4). When the dependent variable (FP) is defined in terms of the deficit-GSDP ratio (specifications (5)-(8)), the magnitude of the borrowing dependence coefficient estimated with the random effects model is much smaller, denoting a 0.004 percentage-point-increase in the dependent variable.

Table 5, Fig. 4 and 5 present the results of propensity score matching (*kmatch ps*), indicating the effects of the MGNREGA program on fiscal performance. As Panel A suggests, the creation of useful livelihood assets and wages produce statistically significant ATTs at the 1- and 5-percent level respectively. The dependent variable in Panel A is fiscal performance as the ratio of the state's deficit to its total expenditure. Therefore, it is reasonable to expect that a higher commitment to the creation of useful livelihood assets contributes to lower levels of fiscal performance. However, in Panel B, where the dependent variable is fiscal performance in the form of the ratio of the state's deficit to the baseline state-level GDP, the negative effects of the MGNREGA on fiscal

performance are observable and statistically significant across several treatments: a rise in deficit as a share of state-level GDP is facilitated by dependence on female employment in percentage of total employment as well as in absolute terms, creation of useful livelihood assets, person days per household, number of job cards issued to households, and wages.

More specifically, the introduction of household assets under MGNREGA, such as animals sheds, farm ponds and horticultural plantations, produces a positive average difference of 3 percent in fiscal deficit in favor of the states that belong to the treatment group (panel A), which is statistically significant at the 1 percent level. Furthermore, the impact of minimum wage rates under MGNREGA on fiscal deficit is positive and produces an average difference of 3.5 percent in favor of states in the treatment group, which is statistically significant at the 5 percent level (panel A). Panel B corroborates the results reported in panel A. The provision of a high number of job cards to households also has a positive effect on fiscal deficit, which is statistically significant at the 5-percent level (panel B). The computation of the Rosenbaum bound tests both in panel A and in panel B of Table 5 offers strong evidence in the direction of causal inference, as the magnitude of the hidden bias estimate is so high that it is unlikely that any omitted covariate could cast doubt on the statistical significance of the reported coefficients.

Table 6 reports the effects of the MGNREGA program with bootstrapped standard errors. We observe that the creation of useful livelihood assets and wages produce a statistically significant average treatment effect on the treated units at the 1- and 5-percent level in Panel A. Thus, our results do not change in comparison to Table 5. The observation remains the same for this type of MGNREGA treatment in Panel B, where the dependent variable is the ratio of the state's deficit to its GDP. In addition to that, we find that, in Panel B, the number of job cards issued to households and the percentage of female employment are also conducive to higher deficits and therefore lower levels of fiscal performance; the ATT of the number of job cards issued to households is statistically significant at the 5-percent level, while of the percentage of female employment at the 10-percent level. In Table 6, where we offer the main robustness check for the results reported in Table 5, we indicate that the MGNREGA program is indeed an important policy framework to evaluate Indian fiscal federalism and, in doing so, we may be confronted with results that differentiate between state capacity and fiscal responsibility. As evidence from MGNREGA points out, higher

Table 6
MGNREGA fulfillment and fiscal performance (Propensity Score Matching with Bootstrapping).

Panel A. Dep. Variable: State's fiscal deficit to total expenditure Treatment	ATT	Treated	Control	N	Matching Algorithm	Critical Level of Hidden Bias (Γ)
Creation of Useful Assetsets	0.030*** (4.02)	582	178	760	Nearest neighbor matching	77.00
HH Job Card	0.013 (1.13)	676	84	760	Nearest neighbor matching	77.00
Timely Payment	−0.000 (−0.00)	694	66	760	Nearest neighbor matching	77.00
Wages	0.035** (2.51)	675	85	760	Nearest neighbor matching	77.00
Person Days	0.017 (1.47)	676	84	760	Nearest neighbor matching	77.00
Average Person Day HH	0.001 (0.07)	673	87	760	Nearest neighbor matching	77.00
HH Provided Employment	0.000 (0.00)	677	83	760	Nearest neighbor matching	77.00
Female Employment	0.008 (0.61)	675	85	760	Nearest neighbor matching	77.00
Female Employment%	0.012 (1.22)	652	108	760	Nearest neighbor matching	77.00
Panel B. Dep. Variable: State's fiscal deficit to its gross domestic product Treatment	ATT	Treated	Control	N	Matching Algorithm	Critical Level of Hidden Bias (Γ)
Creation of Useful Assets	0.000*** (2.96)	582	178	760	Nearest neighbor matching	51.30
HH Job Card	0.000** (2.11)	676	84	760	Nearest neighbor matching	51.30
Timely Payment	0.000 (0.71)	694	66	760	Nearest neighbor matching	51.30
Wages	0.000* (1.80)	675	85	760	Nearest neighbor matching	51.30
Person Days	0.000 (1.32)	676	84	760	Nearest neighbor matching	51.30
Average Person Day HH	0.000 (0.40)	673	87	760	Nearest neighbor matching	51.30
HH Provided Employment	−0.000 (−1.56)	677	83	760	Nearest neighbor matching	51.30
Female Employment	0.000 (1.62)	675	85	760	Nearest neighbor matching	51.30
Female Employment%	0.000* (1.90)	652	108	760	Nearest neighbor matching	51.30

*** Note: Significance levels: $p<0.01$.
** $p<0.05$.
* $p<0.1$.

z-values are in parentheses. NNM=1 without replacement. Common support is imposed. No of replications = 50. Covariates include transfer dependence, borrowing dependence (1), ratio of state to center revenue expenditure, ratio of state to center revenue receipts, agricultural share, population, poverty, and aging dummies.

levels of policy implementation are not positively associated with higher levels of fiscal responsibility. On the contrary, the states with the highest level of policy effectiveness are the ones more likely to exhibit higher levels of deficit. This distinction between fiscal responsibility and state capacity sheds new light in the comparative study of federal economic systems. The high magnitude of the hidden bias thresholds (Rosenbaum bound tests) in Table 6 corroborates the validity of our results and suggests that there is no omitted variables bias in our estimations. In addition to the statistically significant results reported in Table 5, the percentage of female employment have a strong positive impact on fiscal deficit (Table 6).

7. Conclusions

This paper analyzes the effect of federalism on subnational fiscal performance in India from 1991 to 2018. The fiscal federal structure in India has attracted a lot of criticism, particularly for its role in generating disincentives toward prudent fiscal behavior at the subnational level due to the emergence of soft budget constraints. In this paper, we have found that transfer dependence does not matter for fiscal performance at the subnational level. Nevertheless, borrowing dependence leads to lower levels of fiscal performance and it, thus, reinforces the repeated emergence of soft budget constraints. Furthermore, we identify the existence of an orthogonal relationship between fiscal responsibility and the MGNREGA program fulfillment: higher levels of state capacity may not be linked to fiscal responsibility and lower deficits.

Discussing the challenge of soft budget constraints within the context of intergovernmental relations certainly leaves several questions open related to the role of the financial system and the extent to which central governments can harden their budget constraints toward state governments. In democracies, fiscally irresponsible subnational governments are faced with limited term horizons due to political accountability; citizens frequently vote against governments that generate large deficits and, that way, undermine long-run economic performance. Unlike in the financial sector, in intergovernmental relations the hardening of subnational budget constraints is not a binary but a degrees decision. The ability of local or regional governments to generate their own income from foreign direct investment or a higher marginal retention rate allows central governments to reduce the nexus of intergovernmental dependence toward states that face higher poverty and inequality challenges. Redistribution from richer to poorer states in the logic of cross-subsidization and the further inclusion of regional financial institutions could alleviate coordination failures in Indian fiscal federalism. It could also provide a consolidated basis for more social policy in the style of MGNREGA program without compromising on fiscal responsibility.

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