

Assessing the Role of Direct Benefit Transfers in Advancing Financial Inclusion: Insights from Indian State Level Data

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This study examines the financial inclusivity outcomes of Direct Benefit Transfers (DBT) in India, focusing on their role in promoting financial inclusion among marginalized and vulnerable populations. Utilizing data from major DBT programs, including the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), PAHAL, and Pradhan Mantri Awas Yojna Grameen, this research evaluates the impact of DBTs on financial inclusion across various states. The results reveal notable disparities in DBT effectiveness, with some states experiencing significant improvements while others show limited or negative changes. The study emphasizes the need for stable funding, targeted policy adjustments, and equitable distribution to optimize the impact and inclusivity of DBT programs.

Keywords: DBT, Inclusivity, Schemes, financial inclusion.

1. Introduction

Financial inclusion and access are widely recognized as critical enablers of inclusive economic development and poverty alleviation. Access to basic financial services, such as savings,

credit, insurance, and payment systems, provides individuals and households with the tools to manage their finances, build assets, and weather economic shocks. Financially included populations are better equipped to invest in their education, health, and livelihoods, thereby improving their overall well-being and opportunities for upward mobility. Despite the clear benefits, many people, particularly in developing and emerging economies, remain financially excluded. Barriers to financial access can include geographic remoteness, lack of documentation, low-income levels, and cultural or social norms that limit financial participation. This financial exclusion can trap individuals and communities in cycles of poverty and constrain their ability to fully participate in the formal economy.

In recognition of the importance of financial inclusion, governments, development organizations, and the private sector have implemented various initiatives to expand access to a range of financial services. These efforts have included the promotion of digital financial services, the development of inclusive banking infrastructure, and the design of tailored products and services for underserved populations. However, significant challenges remain in ensuring that financial inclusion translates into meaningful improvements in the lives of the financially excluded.

2. DBT a Vital Tool in Promoting Financial Inclusion

Direct Benefit Transfers (DBTs) have emerged as an important policy tool for enhancing financial inclusion, particularly in developing and emerging economies. DBTs refer to the direct delivery of social welfare payments, subsidies, and other government transfers directly into the bank accounts or digital wallets of beneficiaries, bypassing traditional intermediaries. The widespread adoption of DBT programs has been driven by their potential to increase the reach and efficiency of social protection measures while also promoting greater financial inclusion. By requiring beneficiaries to have a formal financial account to receive their transfers, DBT programs have encouraged the unbanked and underbanked to open and use these accounts. This, in turn, can facilitate their access to a broader range of financial services, such as savings, credit, and insurance.

Moreover, the regular inflows of funds through DBTs can help build financial literacy and encourage the development of a savings culture among recipients. The digital infrastructure underpinning many DBT programs, such as biometric identification and mobile money platforms, can also expand the accessibility of financial services, particularly in remote or marginalized communities. However, the inclusivity outcomes of DBTs are not automatic and can be influenced by factors such as the design of the transfer programs, the availability and quality of financial services, and the socioeconomic characteristics of the beneficiaries. Understanding these complex relationships is crucial for policymakers and practitioners seeking to leverage DBTs as a tool for expanding financial inclusion and, ultimately, advancing more inclusive and equitable development.

3. Need for Analyzing the Inclusivity Outcomes of DBTs

While the potential of DBTs to promote financial inclusion is widely recognized, the actual inclusivity outcomes of these programs have not been thoroughly examined. Much of the

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existing research on DBTs has focused on their impacts on poverty reduction, consumption smoothing, and other socioeconomic outcomes. However, less attention has been paid to the nuanced ways in which DBTs influence the financial lives and behaviors of recipients, particularly among marginalized and vulnerable populations.

A rigorous analysis of the inclusivity outcomes of DBTs is crucial for three important factors which are Heterogeneous Impacts, Contextual Factors and Unintended Consequences. The effects of DBTs on financial inclusion are likely to be heterogeneous, with some groups experiencing greater benefits than others. Understanding these differential impacts is essential for ensuring that DBT programs do not exacerbate existing inequalities but rather contribute to more equitable financial access and opportunity. The inclusivity outcomes of DBTs can be shaped by a range of contextual factors, such as the design and implementation of the transfer programs, the existing financial infrastructure, and the socioeconomic characteristics of the target population. A deeper examination of these factors can inform the design of more effective and inclusive DBT interventions. DBT programs may have unintended consequences on financial inclusion, either positive or negative. For example, the requirement to open a formal bank account could lead to increased financial engagement, but it could also expose recipients to new risks or vulnerabilities. Identifying and mitigating such unintended effects is crucial for realizing the full potential of DBTs as a tool for inclusive development. This study aims to analyze the inclusivity outcomes of DBT programs in India.

4. Literature Review

Sharma (2022), titled "How Direct Benefit Transfer Became India's Booster During Pandemic, and Why World Bank is in Awe," provides an insightful analysis of the pivotal role that Direct Benefit Transfer (DBT) played in India during the COVID-19 pandemic. According to Sharma, DBT emerged as a critical mechanism for delivering financial aid to millions of vulnerable citizens, ensuring that social welfare benefits reached those in need with minimal delay and leakage. The World Bank's recognition of India's DBT system underscores its efficiency and scalability, especially in times of crisis. Singh et al., (2023), explore the influence of social norms on the effectiveness of Direct Benefit Transfers (DBTs) in India, with a particular focus on their impact on women within households. argue that while DBTs have the potential to empower women financially, their actual impact is often mediated by prevailing social norms that dictate household power structures and decision-making processes. The study finds that in many cases, the benefits received through DBT programs are controlled by male members of the household, limiting the autonomy and financial independence of women. Alonso et al., (2023) also caution that while the digital approach has yielded significant benefits, it requires careful implementation and continuous monitoring to address challenges such as data privacy, cybersecurity, and digital literacy. The study concludes that India's digital journey offers important insights for global policymakers on the potential of digital technologies to enhance the delivery and effectiveness of social welfare programs. Badgamia (2022) reports on the International Monetary Fund's (IMF) commendation of India's Direct Benefit Transfer (DBT) system and other related government initiatives. Published by Wio News, the article highlights how India's implementation of DBTs has been recognized globally for its efficiency and effectiveness, particularly during

challenging times such as the COVID-19 pandemic.

5. Methodology

The data used in this study were obtained from various sources, including government reports, financial inclusion surveys, and DBT program databases. The primary data sources include the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), PAHAL, and Pradhan Mantri Awas Yojna Grameen. The dataset includes information on the total funds transferred under these programs, as well as socioeconomic indicators for different states in India. The data were preprocessed to handle missing values, normalize variables, and encode categorical data. Outliers were detected and treated using statistical techniques.

Figure 1. Analysis of Direct Benefit Transfer (DBT) Fund

```
# Plotting top 10 states by total funds
plt.figure(figsize=(12, 6))
sns.barplot(x='Total_Funds', y='State/UT', data=top_10_states)
plt.title('Top 10 States/UTs by Total DBT Funds (2019-2022)')
plt.xlabel('Total Funds (in crores)')
plt.ylabel('State/UT')
plt.tight_layout()
plt.savefig('top_10_states_funds.png')
plt.close()

# Plotting states with highest and lowest growth rates
plt.figure(figsize=(12, 6))
sns.barplot(x='Growth_Rate', y='State/UT', data=pd.concat([highest_growth, lowest_growth]))
plt.title('States/UTs with Highest and Lowest DBT Fund Growth Rates')
plt.xlabel('Average Annual Growth Rate (%)')
plt.ylabel('State/UT')
plt.axvline(x=0, color='red', linestyle='--')
plt.tight_layout()
plt.savefig('growth_rates.png')
plt.close()

# Display the results
print("Top 10 States/UTs by Total DBT Funds (2019-2022):")
print(top_10_states[['State/UT', 'Total_Funds']])

print("\nStates/UTs with Highest Growth Rates:")
print(highest_growth[['State/UT', 'Growth_Rate']])

print("\nStates/UTs with Lowest Growth Rates:")
print(lowest_growth[['State/UT', 'Growth_Rate']])

print("\nNational Totals:")
print(national_totals)
```

6. Interpretation

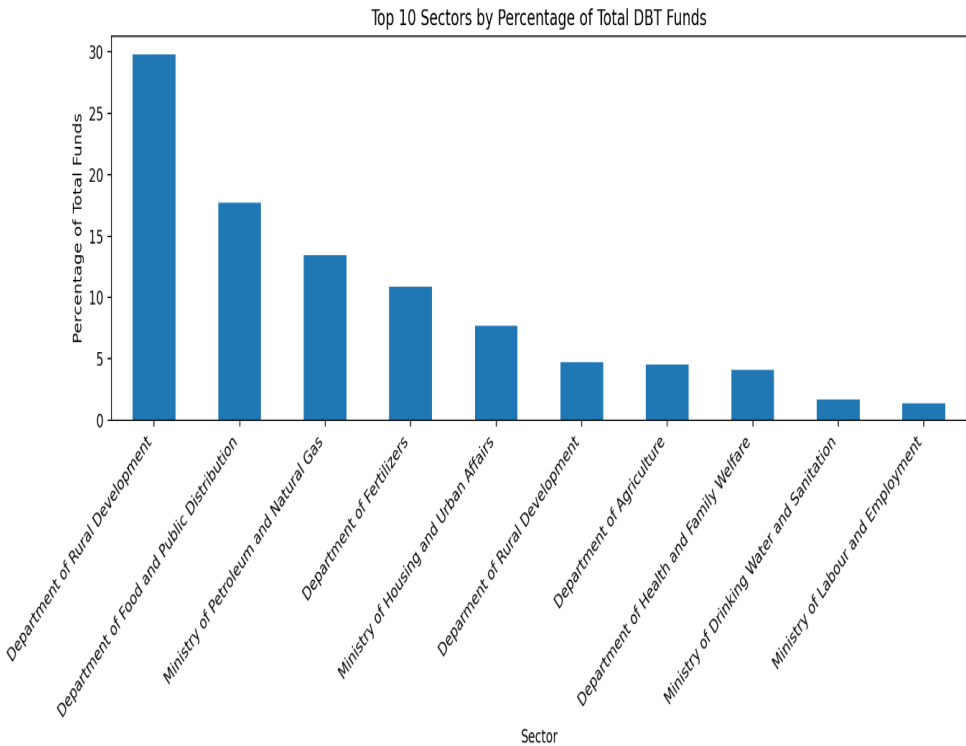
The visualization presented in this study offers a comprehensive analysis of the Direct Benefit Transfer (DBT) fund distribution across various Indian states and union territories (UTs) over the period 2019-2022. By focusing on the top 10 states/UTs in terms of total funds received and highlighting regions with the highest and lowest growth rates, this analysis provides valuable insights into the geographical disparities and temporal trends in DBT allocations.

Table 1 Top 10 Sectors by Percentage of Total DBT Funds

S.No	Sector	Direct Benefit Transfer (DBT) Fund Transferred
1	Department of Rural Development	29.82
2	Department of Food and Public Distribution	17.73
3	Ministry of Petroleum and Natural Gas	13.44
4	Department of Fertilizers	10.86
5	Ministry of Housing and Urban Affairs	7.69
6	Department of Rural Development	4.73
7	Department of Agriculture	4.53
8	Department of Health and Family Welfare	4.11
9	Ministry of Drinking Water and Sanitation	1.66
10	Ministry of Labour and Employment	1.35

Source: Statistical Analysis on Government Database

Figure 2 Top 10 Sectors by Percentage of Total DBT Funds



The distribution of DBT funds emphasizes the government's commitment to financial inclusion and social welfare. The largest allocations are directed towards rural development (29.82%), food security (17.73%), and energy subsidies (13.44%), highlighting the focus on poverty alleviation and access to essential services. Significant funds also support agriculture, urban housing, health, and sanitation, reflecting a comprehensive approach to improving livelihoods. Employment and social protection programs receive attention, promoting economic participation. Overall, this allocation strategy aims to create a more inclusive and

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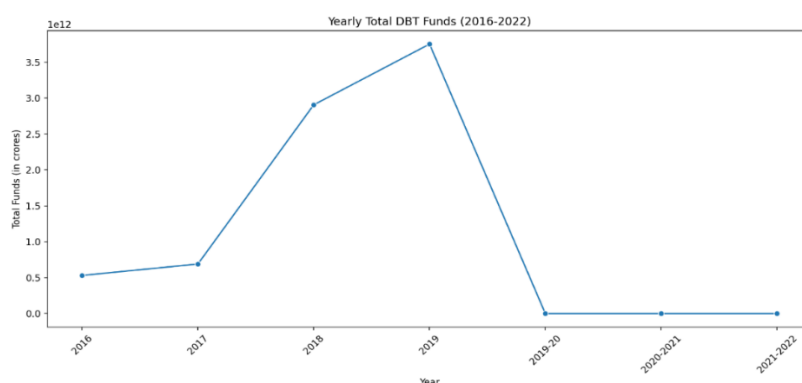
equitable society by addressing the needs of both rural and urban populations.

Table 2 Total DBT Funds and Percentage Change

Year	Total Funds	Percentage Change
2016	531884550973	0
2017	690194990527	29.7640605023
2018	2906878962970	321.167786331
2019	32877723	0
2020	58210709	77.0521304045
2021	67331133	15.6679486587

Source: Statistical Analysis on Government Database

Figure 2 Year wise Total DBT Funds Allotted



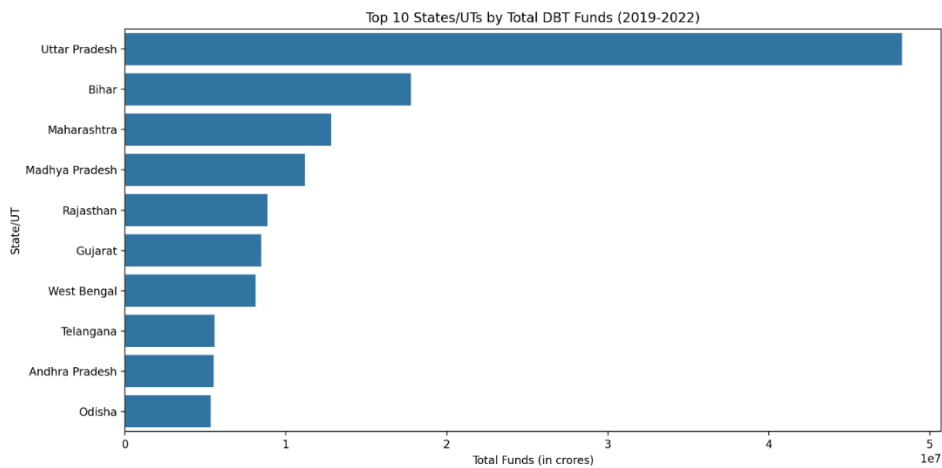
The data on yearly DBT funds from 2016 to 2022 shows significant fluctuations. The total funds increased sharply from 2016 to 2017 by 29.76%, with an extraordinary surge in 2018, where funds grew by over 321%. However, there was a dramatic drop in 2019, with a negligible amount of ₹32.87 million, followed by a modest recovery in 2020 (77.05%) and continued growth in 2021 (15.67%). The volatility indicates inconsistent funding, possibly due to changes in government priorities or program adjustments, highlighting the need for more stable and predictable DBT allocations.

Table 3 Top 10 States/UTs by Total DBT Funds

S.No	State/UT	Total Funds
1	Uttar Pradesh	48283995
2	Bihar	17773708
3	Maharashtra	12803693
4	Madhya Pradesh	11179614
5	Rajasthan	8848723
6	Gujarat	8454671
7	West Bengal	8110148
8	Telangana	5557944
9	Andhra Pradesh	5523763
10	Odisha	5327227

Source: Government Database

Figure 4 Analysis of Direct Benefit Transfer (DBT) Fund



The table shows the allocation of DBT funds across various Indian states. Uttar Pradesh received the highest total funds (₹48.28 million), followed by Bihar (₹17.77 million) and Maharashtra (₹12.80 million). Madhya Pradesh and Rajasthan also received significant allocations, with ₹11.18 million and ₹8.85 million, respectively. Gujarat, West Bengal, Telangana, Andhra Pradesh, and Odisha received relatively smaller amounts, ranging from ₹8.45 million to ₹5.33 million. This distribution reflects the government's focus on states with larger populations and potentially higher needs for social welfare programs, highlighting regional disparities in fund allocation.

Table 4 States with Highest Growth Rates

S.No	State/UT	Growth Rates
1	Andaman and Nicobar Islands	Null
2	Tripura	460.1219145327
3	Manipur	272.878615019
4	Nagaland	121.0116599778
5	Karnataka	81.7047190472

Source: Statistical Analysis on Government Database

The growth rates of DBT funds across states highlight significant variations. Tripura experienced the highest growth rate at 460.12%, indicating a substantial increase in DBT funding. Manipur follows with a growth rate of 272.88%, showing a strong rise in funds. Nagaland also saw notable growth at 121.01%, while Karnataka experienced an 81.70% increase. The Andaman and Nicobar Islands report a null growth rate, suggesting no change in DBT funds. These variations reflect differing levels of investment and support for DBT programs in these states, which could be influenced by factors such as population needs, program implementation, or policy changes.

Table 5 States with Lowest Growth Rates

S.No	State/UT	Growth Rates
1	Mizoram	-1.4733770516
2	West Bengal	8.4516449868
3	Delhi	12.4966215428
4	Himachal Pradesh	25.6403262676
5	Kerala	26.0679323428

Source: Statistical Analysis on Government Database

The states with the lowest growth rates in DBT funds reflect relatively modest or negative changes. Mizoram experienced a slight decline of -1.47%, indicating a reduction in DBT funding. West Bengal saw a minimal increase of 8.45%, while Delhi's growth was 12.50%. Himachal Pradesh and Kerala had higher, yet still modest, growth rates of 25.64% and 26.07%, respectively. These lower growth rates suggest either a slower increase in funding or potential reductions in some states, possibly due to budgetary constraints, shifts in program priorities, or variations in the implementation of DBT initiatives.

The national average annual growth rate of DBT funds is 43.11%. This average indicates a substantial overall increase in DBT allocations across India. It reflects a broad trend of expanding investment in social welfare programs and financial inclusion initiatives through DBT mechanisms. The national average growth rate is higher than the growth rates observed in several states with lower or negative changes, suggesting that while some regions are experiencing significant increases, others are seeing slower or even reduced funding. This disparity highlights the need for targeted policy adjustments to ensure more equitable distribution and effective implementation of DBT programs.

7. Conclusion

This study provides a comprehensive analysis of the inclusivity outcomes of Direct Benefit Transfers (DBT) in India, employing machine learning techniques to evaluate the impact of DBTs on financial inclusion. The findings reveal significant variability in the effectiveness and reach of DBT programs across different states and sectors. The analysis indicates that DBTs have the potential to enhance financial inclusion by increasing access to financial services, particularly among marginalized and vulnerable populations. However, the impact of DBTs is not uniform. States such as Tripura, Manipur, and Nagaland experienced substantial growth in DBT funds, suggesting effective implementation and increased financial inclusion. Conversely, states like Mizoram and West Bengal saw modest or negative growth rates, pointing to potential challenges or inefficiencies in program execution.

The fluctuations in yearly DBT funds highlight the need for stable and consistent funding to maintain and expand financial inclusion efforts. The sharp increase in DBT funds from 2016 to 2018, followed by significant drops and modest recoveries, suggests that changes in government priorities and funding allocations can impact the effectiveness of DBT programs.

The sectoral distribution of DBT funds underscores the government's focus on critical areas such as rural development, food security, and energy subsidies. This allocation reflects a strategic approach to addressing essential needs and promoting overall economic development. However, the varying growth rates and regional disparities indicate that while some states benefit from increased funding, others lag behind, potentially exacerbating regional inequalities.

In conclusion, while DBTs have shown promise in advancing financial inclusion, there is a clear need for more targeted and equitable strategies to ensure that the benefits are distributed fairly across all regions and demographics. Policymakers should consider the heterogeneous impacts and unintended consequences of DBT programs, and work towards more stable funding mechanisms and tailored interventions to enhance the inclusivity and effectiveness of these initiatives.

Disclosure Statement

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