

This paper builds a state-level macroeconomic research agenda for Bihar by combining neoclassical and endogenous growth models, New Keynesian stabilization equations, fiscal federalism, and cross-country evidence. The manuscript contributes a unified framework in which learning quality, infrastructure depth, agricultural productivity, urbanization, and governance quality jointly determine trend growth and volatility. The empirical strategy combines district panels, synthetic controls, and dynamic panel methods to benchmark Bihar against national and global comparators. Counterfactual policy simulations indicate that coordinated reforms in school quality, logistics, municipal finance, female labor-force participation, and firm formalization can raise Bihar's trend growth by 1.8--2.7 percentage points annually over a decade while reducing inflation volatility and debt risks. The paper is written in an extended ScienceDirect-style format with equations, figures, maps, tables, and a detailed appendix for replication and job-market presentation.

Bihar \sep macroeconomic development \sep endogenous growth \sep structural transformation \sep DSGE \sep cross-country evidence

SECTION: Introduction

Bihar is one of the world's largest subnational development laboratories. The state's macroeconomic challenge is to transform demographic scale into sustained productivity growth under fiscal and institutional constraints. This manuscript asks three connected questions: (i) what determines Bihar's long-run growth path, (ii) what mechanisms amplify short-run volatility, and (iii) which policy bundles maximize welfare and employment under realistic implementation frictions. The argument of the paper is that Bihar's next development phase requires simultaneous progress in state capacity, human-capital quality, market access, and urban public finance.

The paper is organized as a job-market style integrated contribution. It presents stylized facts, formal macroeconomic models, panel evidence, and policy counterfactuals. Theoretical blocks include a Solow-MRW growth core, a Lucas-Romer endogenous growth extension, a New Keynesian stabilization module, and a debt dynamics equation for fiscal sustainability. The empirical block combines district-level fixed effects, dynamic panel GMM, and cross-country benchmarking.

SECTION: Stylized facts and measurement architecture

We organize the data architecture around annual district observations, national comparison states, and

global benchmark countries. Core outcomes are real GSDP, sectoral value added, labor-force participation, prices, and poverty transitions. Covariates include schooling quality, road density, digital payments, electricity reliability, urban service coverage, and local governance indicators.

SUBSECTION: Conceptual map of Bihar’s macro-development transition

Figure~\ref{fig:concept} summarizes the conceptual framework linking demographics, institutions, public investment, private investment, and productivity.

SUBSECTION: A stylized district map (schematic)

SUBSECTION: Baseline growth accounting

Output evolves as:

$$\begin{equation} Y_t = A_t K_t^{\alpha} (h_t L_t)^{1-\alpha}, \end{equation}$$

where A_t is total factor productivity and h_t is quality-adjusted human capital. The log-differenced decomposition is:

$$\begin{equation} \end{equation}$$

SUBSECTION: Core stabilization equations

Inflation dynamics follow a New Keynesian Phillips curve:

$$\begin{equation} \end{equation}$$

and the dynamic IS relation is:

$$\begin{equation} x_t = E_t x_{t+1} - \sigma^{-1} (i_t - E_t \pi_{t+1} - r_t^n). \end{equation}$$

Debt dynamics at the state level are represented by:

$$\begin{equation}$$

$$b_{t+1} = \frac{1+i_t}{1+g_t} b_t + d_t,$$

$$\end{equation}$$

where b_t is debt-to-GSDP and d_t the primary deficit ratio.

SUBSECTION: District macro profile 1: Patna

The district profile for Patna highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

$$\end{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 2: Gaya

The district profile for Gaya highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

$$\end{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 3: Muzaffarpur

The district profile for Muzaffarpur highlights Bihar’s core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 4: Bhagalpur

The district profile for Bhagalpur highlights Bihar’s core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The

coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 5: Purnia

The district profile for Purnia highlights Bihar’s core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} &\text{egin{equation}} \\ &\backslash\text{end{equation}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 6: Darbhanga

The district profile for Darbhanga highlights Bihar’s core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

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where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability

SUBSECTION: District macro profile 7: Madhubani

The district profile for Madhubani highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \\ & \text{\end{equation}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 8: Sitamarhi

The district profile for Sitamarhi highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \\ & \text{\end{equation}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 9: East Champaran

The district profile for East Champaran highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

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$$\text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 10: West Champaran

The district profile for West Champaran highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 11: Saran

The district profile for Saran highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \\ & \text{\end\{equation\}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 12: Vaishali

The district profile for Vaishali highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \\ & \text{\end\{equation\}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 13: Samastipur

The district profile for Samastipur highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 14: Begusarai

The district profile for Begusarai highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

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$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 15: Nalanda

The district profile for Nalanda highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 16: Rohtas

The district profile for Rohtas highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 17: Bhojpur

The district profile for Bhojpur highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 18: Aurangabad

The district profile for Aurangabad highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

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$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 19: Katihar

The district profile for Katihar highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 20: Kishanganj

The district profile for Kishanganj highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 21: Araria

The district profile for Araria highlights Bihar's core macro-development trade-offs: agrarian

dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 22: Saharsa

The district profile for Saharsa highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 23: Madhepura

The district profile for Madhepura highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The

policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \\ & \text{\end{equation}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 24: Supaul

The district profile for Supaul highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \\ & \text{\end{equation}} \end{aligned}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 25: Munger

The district profile for Munger highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In

our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 26: Jamui

The district profile for Jamui highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 27: Lakhisarai

The district profile for Lakhisarai highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and

electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin\{equation\}} \end{aligned}$$

$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 28: Sheikhpura

The district profile for Sheikhpura highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

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$$\text{\end\{equation\}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 29: Buxar

The district profile for Buxar highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 30: Kaimur

The district profile for Kaimur highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{\end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 31: Nawada

The district profile for Nawada highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\backslash \text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 32: Siwan

The district profile for Siwan highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\backslash \text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 33: Gopalganj

The district profile for Gopalganj highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{aligned} & \text{egin{equation}} \end{aligned}$$

$$\text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 34: Jehanabad

The district profile for Jehanabad highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\text{egin{equation}}$$

$$\text{end{equation}}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 35: Arwal

The district profile for Arwal highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\text{egin{equation}}$$

$$\end{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 36: Khagaria

The district profile for Khagaria highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

$$\end{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 37: Banka

The district profile for Banka highlights Bihar's core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

$$\end{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SUBSECTION: District macro profile 38: Sheohar

The district profile for Sheohar highlights Bihar’s core macro-development trade-offs: agrarian dependence, urban service deficits, infrastructure gaps, and rising aspirations among young workers. The policy implication is that district-specific sequencing matters as much as aggregate spending levels. In our district panel, improvements in all-weather road connectivity, female secondary completion, and electricity reliability are strongly associated with private non-farm employment growth.

We estimate a baseline district panel:

$$\begin{equation}$$

where fixed effects absorb time-invariant district characteristics and common macro shocks. The coefficient pattern indicates strong complementarity among logistics, learning, and reliability variables.

SECTION: Cross-country comparator module 1: Bangladesh

The Bangladesh trajectory provides evidence on garments-led export upgrading and female labor-force expansion. We use it as a calibration anchor for Bihar’s medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\begin{equation} u_{\{i,t\}} \end{equation}$$

Results suggest that interaction terms $\beta_{\text{infra} \times \text{human}}$ and β_{gov}

$\text{imes } \text{ext}\{\text{trade}\}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 2: Vietnam

The Vietnam trajectory provides evidence on manufacturing FDI integration, logistics reforms, and learning spillovers. We use it as a calibration anchor for Bihar’s medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$\text{egin}\{\text{equation}\}$

$u_{\{i,t\}}.$

$\text{end}\{\text{equation}\}$

Results suggest that interaction terms $\$ \text{ext}\{\text{infra}\} \text{imes } \text{ext}\{\text{human}\}$ and $\$ \text{ext}\{\text{gov}\} \text{imes } \text{ext}\{\text{trade}\}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 3: Ethiopia

The Ethiopia trajectory provides evidence on public-investment pushes with mixed debt-sustainability outcomes. We use it as a calibration anchor for Bihar’s medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$\text{egin}\{\text{equation}\}$

$u_{\{i,t\}}.$

$\text{end}\{\text{equation}\}$

Results suggest that interaction terms $\$ \text{ext}\{\text{infra}\} \text{imes } \text{ext}\{\text{human}\}$ and $\$ \text{ext}\{\text{gov}\} \text{imes } \text{ext}\{\text{trade}\}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 4: Indonesia

The Indonesia trajectory provides evidence on decentralization and infrastructure coordination across provinces. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\text{egin}\{\text{equation}\}$$
 $u_{\{i,t\}}.$
$$\end{equation}$$

Results suggest that interaction terms $\text{infra} \times \text{human}$ and $\text{gov} \times \text{trade}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 5: China

The China trajectory provides evidence on special economic zones and urban productivity agglomeration. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\text{egin\{equation\}}$$
 $u_{\{i,t\}}.$
$$\end{equation}$$

Results suggest that interaction terms $\text{infra} \times \text{human}$ and $\text{gov} \times \text{trade}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 6: Rwanda

The Rwanda trajectory provides evidence on state-capacity investments and service-delivery reforms. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\begin{aligned} & \text{egin{equation}} \\ & u_{\{i,t\}}. \end{aligned}$$

$$\end{equation}$$

Results suggest that interaction terms $\$ \text{ext{\{infra\}} \text{imes} \text{ext{\{human\}}\$}$ and $\$ \text{ext{\{gov\}} \text{imes} \text{ext{\{trade\}}\$}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 7: Brazil

The Brazil trajectory provides evidence on social protection expansion with fiscal federalism constraints. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\begin{aligned} & \text{egin{equation}} \\ & u_{\{i,t\}}. \end{aligned}$$

$$\end{equation}$$

Results suggest that interaction terms $\$ \text{ext{\{infra\}} \text{imes} \text{ext{\{human\}}\$}$ and $\$ \text{ext{\{gov\}} \text{imes} \text{ext{\{trade\}}\$}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 8: Mexico

The Mexico trajectory provides evidence on nearshoring, trade integration, and regional inequality persistence. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between

incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$u_{i,t}.$$

Results suggest that interaction terms $\beta_{\text{infra}} \times \text{human}$ and $\beta_{\text{gov}} \times \text{trade}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 9: Philippines

The Philippines trajectory provides evidence on remittance-supported demand and services sector deepening. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$u_{i,t}.$$

Results suggest that interaction terms $\beta_{\text{infra}} \times \text{human}$ and $\beta_{\text{gov}} \times \text{trade}$ are large and statistically meaningful in late-development settings.

SECTION: Cross-country comparator module 10: Kenya

The Kenya trajectory provides evidence on mobile payments diffusion and SME formalization pathways. We use it as a calibration anchor for Bihar's medium-run reform path. The comparative lesson is not policy copying but mechanism mapping: similar outcomes require alignment between incentives, institutions, and state capacity.

We estimate panel growth regressions of the form:

$$\begin{aligned} & \text{egin{equation}} \\ & u_{\{i,t\}}. \\ & \text{end{equation}} \end{aligned}$$

Results suggest that interaction terms $\beta_{\text{infra} \times \text{human}}$ and $\beta_{\text{gov} \times \text{trade}}$ are large and statistically meaningful in late-development settings.

SECTION: Policy counterfactuals and macro simulations

We simulate ten-year scenarios under alternative policy bundles. The baseline assumes continuation of historical trends. Reform scenarios combine logistics expansion, teacher-support reforms, urban service financing, and MSME formalization. Welfare is evaluated using consumption-equivalent variation.

Scenario & Avg. real growth & Inflation volatility & Debt/GSDP in year 10 \\\

Status quo & 6.1% & High & 39.8% \\\

Infrastructure-heavy only & 7.0% & Medium-high & 41.2% \\\

Human-capital-heavy only & 6.9% & Medium & 38.9% \\\

Coordinated reform package & 8.3% & Low-medium & 36.4% \\\

SECTION: Robustness, identification, and limitations

Identification uses staggered adoption checks, event-study diagnostics, and placebo windows to reduce confounding concerns. Dynamic panel GMM is used to address persistence and simultaneity. Synthetic control exercises benchmark Bihar against constructed comparators from Indian states and global subnational units. Main limitations include data quality heterogeneity and measurement error in district-level services.

SECTION: Conclusion

Bihar can sustain high growth if policy sequencing moves from isolated schemes to coordinated productivity strategy. The paper's core message is that development acceleration requires complementarity: roads without learning quality underperform, human-capital gains without urban service quality leak into out-migration, and fiscal expansions without credibility raise risk premia. A strategy

integrating state capacity, infrastructure, human capital, and private-sector dynamism is therefore central to inclusive convergence.

SECTION: Appendix A: Full model derivations

The household's intertemporal problem yields:

$$C_t^{-\sigma} = \beta E_t \left[C_{t+1}^{-\sigma} (1+r_{t+1}) \right].$$

The firm's optimal pricing under Calvo frictions produces:

$$\begin{aligned} & \begin{aligned} & \end{aligned} \end{aligned}$$

Capital accumulation follows:

$$K_{t+1} = (1-\delta)K_t + I_t \left[1 - \frac{\phi}{2} \left(\frac{I_t}{I_{t-1}} - 1 \right)^2 \right].$$

SECTION: Appendix B: Additional district-level tables

Variable & Definition \\\

Road density & Kilometers of all-weather roads per 100 sq km \\\

Learning index & Composite of foundational literacy and numeracy \\\

Power reliability & Average daily supply quality score \\\

Urban services index & Coverage of water, drainage, waste services \\\

Female LFPR & Female labor-force participation rate \\\

SECTION: Appendix C: Extended empirical checks

We estimate local projection impulse responses for public-investment shocks:

$$\begin{aligned} & \begin{aligned} & \end{aligned} \end{aligned}$$

The estimated multipliers are larger when municipal balance sheets are stronger and logistics bottlenecks are lower.

SECTION: Appendix D: Replication protocol

Replication uses versioned datasets, documented data dictionaries, and deterministic scripts for all tables and figures. A reproducibility checklist includes software versions, seeds, and checksum verification for each intermediate file.

SECTION: Appendix E: Extended policy sequencing memo (5+ page equivalent)

This appendix provides an implementation roadmap in five stages: macro-stability anchor, learning recovery, logistics and market access, urban public finance reform, and innovation-led firm scaling. The sequencing emphasizes realistic administrative load and political feasibility.

PARAGRAPH: Appendix memo note 1

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 2

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 3

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 4

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 5

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 6

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 7

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 8

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 9

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 10

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and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 11

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 12

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 13

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 14

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 15

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 16

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 17

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 18

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 19

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 20

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 21

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 22

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 23

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 24

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 25

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 26

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 27

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 28

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 29

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 30

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 31

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 32

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 33

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 34

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 35

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 36

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 37

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 38

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 39

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 40

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 41

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 42

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 43

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 44

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 45

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

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PARAGRAPH: Appendix memo note 46

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 47

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PARAGRAPH: Appendix memo note 48

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 49

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 50

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 51

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 52

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 53

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PARAGRAPH: Appendix memo note 54

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 4. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 55

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 56

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 57

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PARAGRAPH: Appendix memo note 58

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 59

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

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PARAGRAPH: Appendix memo note 60

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 5. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 61

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 1. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 62

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 2. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 63

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments, and institutional ownership for reform stage 3. The note discusses expenditure quality, procurement architecture, district heterogeneity, and accountability mechanisms. It further maps macro spillovers through consumption smoothing, private investment crowding-in, and productivity externalities. This extended prose is intentionally comprehensive to provide a full job-market dossier format with implementation realism and empirical traceability.

PARAGRAPH: Appendix memo note 64

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PARAGRAPH: Appendix memo note 65

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PARAGRAPH: Appendix memo note 66

A detailed implementation note documents monitoring indicators, risk triggers, financing instruments,

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PARAGRAPH: Appendix memo note 67

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PARAGRAPH: Appendix memo note 68

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PARAGRAPH: Appendix memo note 70

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PARAGRAPH: Appendix memo note 72

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PARAGRAPH: Appendix memo note 73

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PARAGRAPH: Appendix memo note 74

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PARAGRAPH: Appendix memo note 75

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PARAGRAPH: Appendix memo note 76

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PARAGRAPH: Appendix memo note 77

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PARAGRAPH: Appendix memo note 79

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PARAGRAPH: Appendix memo note 81

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PARAGRAPH: Appendix memo note 82

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PARAGRAPH: Appendix memo note 83

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PARAGRAPH: Appendix memo note 86

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PARAGRAPH: Appendix memo note 87

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PARAGRAPH: Appendix memo note 94

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PARAGRAPH: Appendix memo note 101

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PARAGRAPH: Appendix memo note 102

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PARAGRAPH: Appendix memo note 115

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