

Identification of Growth Determinants for Analysing Regional Growth Across the Districts of Uttar Pradesh



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Graduate Thesis for Masters in Urban and Regional Planning, Cornell University

*Urban Planners lack an
understanding of economics and
economists lack an understanding
of urban planning*



“



identifying research objectives

- understand the nature and pattern of intrastate disparity in economic growth
- a comparative and descriptive analysis of four economic regions in Uttar Pradesh
- test and explain the effect of growth determining factors such as agglomeration and endogenous factors of human capital, and institutional capacity at the district level

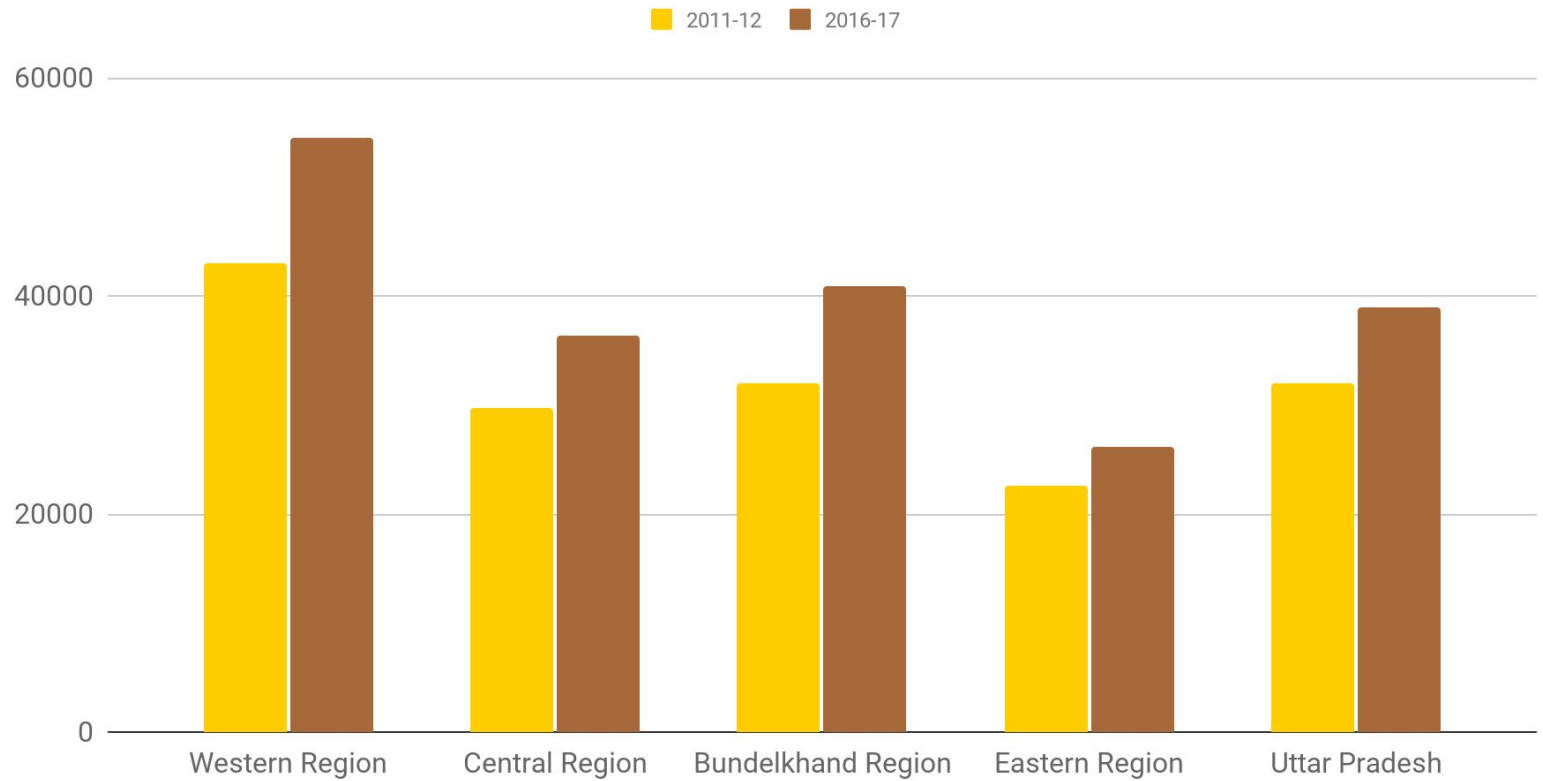
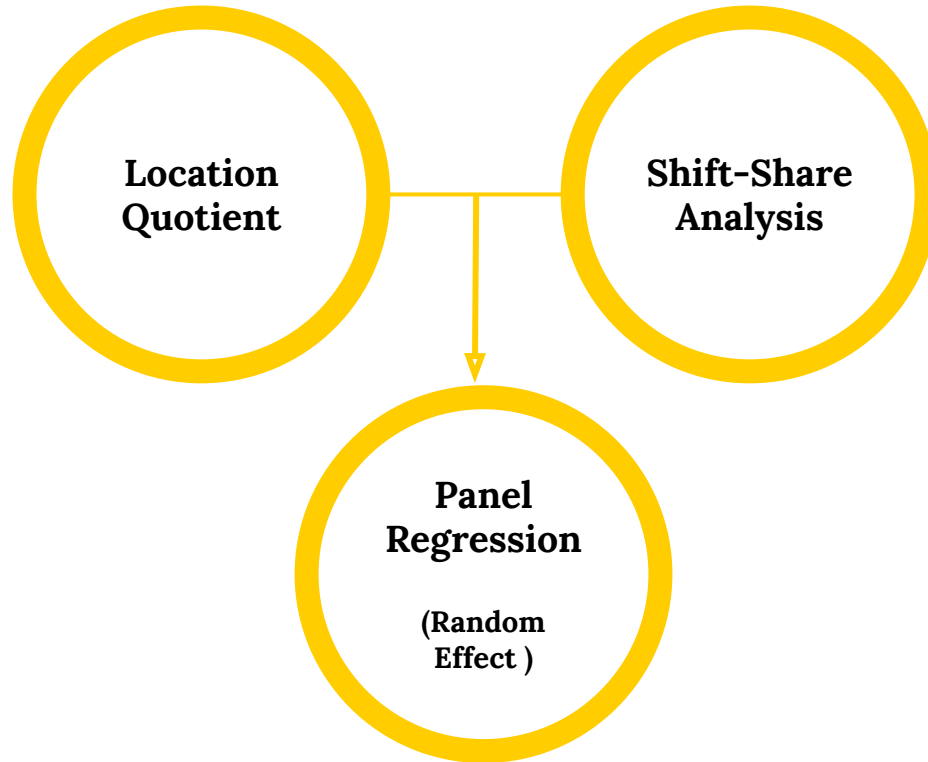


Figure 1. *Region-wise comparison of GDP per capita (in INR)*





methodology



1

Shift Share & Location Quotient Analysis

Part - I



definitions & formulae

Shift-Share

Shift- share analysis is a descriptive tool to explain past regional growth using three components:

1. national growth 2. industry mix and 3. the region-specific competitive share.

$$NG_{ir}^t = GDP_{ir}^{t-1} * \left(\frac{GDP_{UP}^t}{GDP_{UP}^{t-1}} - 1 \right)$$

$$IM_{ir}^t = GDP_{ir}^{t-1} * \left(\left(\frac{GDP_{iUP}^t}{GDP_{iUP}^{t-1}} \right) - \left(\frac{GDP_{UP}^t}{GDP_{UP}^{t-1}} \right) \right)$$

$$CS_{ir}^t = GDP_{ir}^{t-1} * \left(\left(\frac{GDP_{ir}^t}{GDP_{ir}^{t-1}} \right) - \left(\frac{GDP_{iUP}^t}{GDP_{iUP}^{t-1}} \right) \right)$$

Location Quotient

This technique is used to identify the relative specialization of the region in selected sectors of the economy and help identify key industry clusters experiencing agglomeration effect

$$LQ = \left(\frac{\frac{GDP_{ir}^m}{GDP_{ir}^{total}}}{\frac{GDP_{iUP}^m}{GDP_{iUP}^{total}}} \right)$$

Uttar Pradesh overview

4 REGIONS

- Western
- Central
- Budelkhand
- Eastern



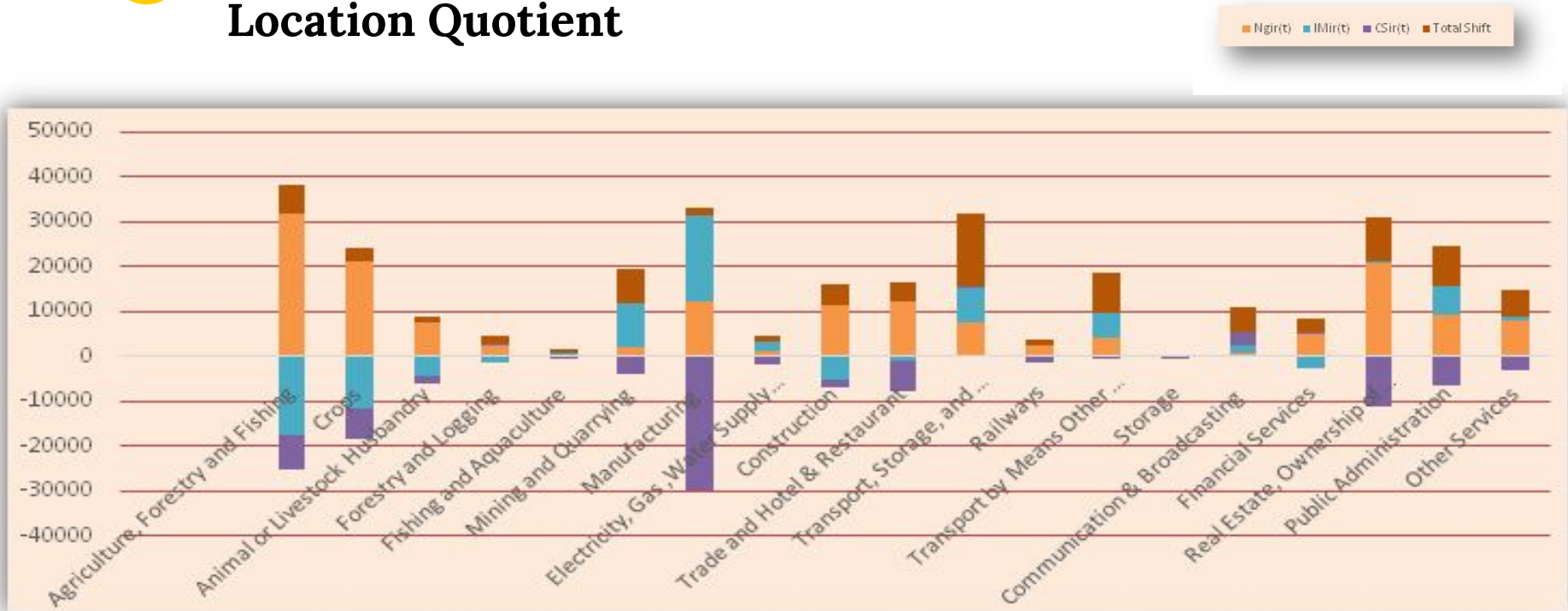
Eastern Region Shift/Share Analysis and Location Quotient



Economic Activity	Ngir(t)	IMir(t)	CSir(t)	TOTAL shift	Actual Increase in district r	LQ wrt UP 2011- 12	LQ wrt UP 2017- 18	Difference in LQ
					2011-18			
Agriculture, Forestry and Fishing	31769.48	-17519.35	-7816.77	6433.35	6433.35	0.94	0.99	0.05
Crops	21174.40	-11659.64	-6716.61	2798.14	2798.14	0.95	0.96	0.01
Animal or Livestock Husbandry	7358.85	-4128.16	-1727.34	1503.35	1503.35	0.85	0.91	0.05
Forestry and Logging	2389.45	-1543.50	695.06	1541.02	1541.02	0.97	1.33	0.36
Fishing and Aquaculture	846.78	48.55	-304.49	590.84	590.84	1.73	1.79	0.06
Mining and Quarrying	2157.54	9524.24	-3892.74	7789.04	7789.04	1.88	1.67	-0.21
Manufacturing	12368.63	19061.73	-29793.62	1636.75	1636.75	0.89	0.45	-0.44
Electricity, Gas, Water Supply & Other Utility Services	1289.80	1990.34	-1867.89	1412.24	1412.24	1.04	0.81	-0.23
Construction	11553.28	-5170.22	-1822.57	4560.49	4560.49	0.71	0.79	0.08
Trade and Hotel & Restaurant	12091.89	-1054.94	-6734.24	4302.70	4302.70	0.93	0.87	-0.06
Transport, Storage, and Communication	7661.33	7792.98	346.47	15800.78	15800.78	1.11	1.35	0.24
Railways	2563.84	-215.73	-1232.94	1115.17	1115.17	1.51	1.46	-0.05
Transport by Means Other Means	4057.38	5519.49	-380.69	9196.18	9196.18	1.14	1.33	0.19
Storage	163.23	-62.05	-32.62	68.56	68.56	0.86	0.94	0.08
Communication & Broadcasting	876.88	1456.76	3087.23	5420.87	5420.87	0.62	1.35	0.73
Financial Services	5393.32	-2466.15	87.59	3014.76	3014.76	1.09	1.31	0.23
Real Estate, Ownership of Dwellings and Professional Services	20841.78	226.29	-11163.99	9904.08	9904.08	1.24	1.18	-0.06
Public Administration	9120.15	6441.48	-6538.27	9023.35	9023.35	1.40	1.31	-0.09
Other Services	7776.38	1111.24	-3154.19	5733.43	5733.43	1.24	1.27	0.03
Total	161454.37	0.00	-69609.28	91845.09	91845.09	1.00	1.00	0.00



Eastern Region Shift/Share Analysis and Location Quotient



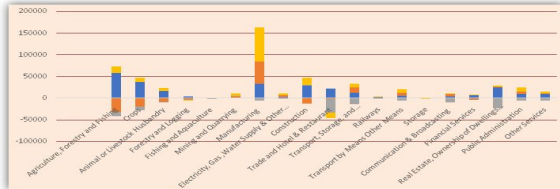


similarly for other regions

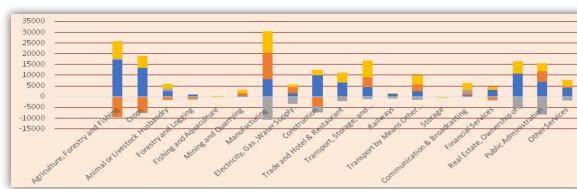
Economic Activity	NGH1	IM(I)	CS(I)	TOTAL SHR	Actual Increase in deficit r 2015-18	LQ wrt UP 2011-12	LQ wrt UP 2017-18	Difference in LQ
2015-18								
Agriculture, Forestry and Fishing	5772.86	-31832.51	-1057.27	15365.08	15365.08	0.99	1.08	0.09
Crops	3936.78	-20944.24	-7807.09	9555.45	9555.45	0.97	1.05	0.08
Animal or Livestock Husbandry	1635.72	-9236.75	-584.91	6639.06	6639.06	1.11	1.31	0.20
Forestry and Logging	4076.04	-2832.97	-2302.46	965.61	965.61	0.86	0.80	-0.15
Fishing and Aquaculture	157.31	8.02	131.16	131.16	131.16	0.19	0.20	0.01
Mining and Quarrying	193.26	4076.81	26.33	1020.79	1020.79	0.47	0.56	0.09
Manufacturing	3119.35	51161.58	-4623.38	78315.56	78315.56	1.39	1.60	0.21
Electricity, Gas, Water Supply & Other Utility Services	2481.87	3843.30	-2244.44	4082.72	4082.72	1.17	1.10	-0.07
Construction	29796.80	-18307.56	322.35	16751.60	16751.60	1.07	1.29	0.22
Traze and Hotel & Restaurant	22222.89	-19366.60	10264.02	11979.03	11979.03	1.00	0.91	-0.09
Transport, Storage, and Communication	11779.11	11986.49	-1407.31	9185.28	9185.28	1.00	0.79	-0.21
Railways	2230.10	-187.05	-391.09	1651.82	1651.82	0.76	0.85	0.09
Transport by Means Other Means	3332.92	7327.68	-5301.88	7178.56	7178.56	0.87	0.77	-0.09
Storage	370.12	-149.70	-483.12	263.90	263.90	1.13	0.54	-0.59
Communication & Broadcasting	3364.92	6423.81	4966.53	4322.21	4322.21	1.58	0.78	-0.80
Financial Services	6271.21	-3897.58	-1799.40	1604.03	1604.03	0.74	0.76	0.03
Real Estate, Ownership of Dwellings and Professional Services	29631.00	281.88	-3051.31	1706.66	1706.66	0.90	0.69	-0.21
Public Administration	6893.08	6233.10	-5795.56	9388.24	9388.24	0.79	0.76	-0.03
Other Services	879.27	1268.66	4379.56	3865.46	3865.46	0.82	0.74	-0.09
Total	279563.34	0.00	-119976.78	157986.56	157986.56	1.00	1.00	0.00

Economic Activity	NGH1	IM(I)	CS(I)	TOTAL SHR	Actual Increase in deficit r 2015-18	LQ wrt UP 2011-12	LQ wrt UP 2017-18	Difference in LQ
2015-18								
Agriculture, Forestry and Fishing	17244.25	-9509.38	382.30	8117.16	8117.16	0.86	0.99	0.13
Crops	13264.79	-7930.01	-380.77	5577.08	5577.08	1.01	1.13	0.12
Animal or Livestock Husbandry	2958.01	-1438.03	128.90	331.00	331.00	0.90	0.70	-0.20
Forestry and Logging	1107.35	-276.06	-49.77	-11.46	-11.46	0.80	0.76	-0.06
Fishing and Aquaculture	151.13	14.80	219.67	319.67	319.67	0.89	0.90	0.05
Mining and Quarrying	301.87	3330.80	-57.00	1257.37	1257.37	0.48	0.48	0.00
Manufacturing	8066.48	12431.52	-10577.10	9026.90	9026.90	0.99	0.77	-0.22
Electricity, Gas, Water Supply & Other Utility Services	1761.75	2718.62	-3409.24	1071.13	1071.13	1.41	1.46	-0.05
Construction	6939.93	-4982.23	2948.85	2064.84	2064.84	2.04	1.00	-1.02
Traze and Hotel & Restaurant	6996.26	-475.75	-14961.11	4254.41	4254.41	0.86	0.88	0.02
Transport, Storage, and Communication	4658.56	4535.17	-1116.04	7877.70	7877.70	1.10	1.16	0.06
Railways	1296.06	-108.89	-499.62	495.53	495.53	1.29	1.15	-0.14
Transport by Means Other Means	2464.14	8364.20	-10961.83	4279.99	4279.99	1.18	1.11	-0.04
Storage	1182.22	-50.20	-43.81	-1.07	-1.07	1.17	0.95	-0.22
Communication & Broadcasting	587.83	1973.75	1583.09	3144.65	3144.65	0.79	1.29	0.39
Financial Services	3216.02	-1474.89	-127.12	1615.87	1615.87	1.10	1.22	0.13
Real Estate, Ownership of Dwellings and Professional Services	10242.26	118.61	-5772.87	5470.00	5470.00	1.10	1.01	-0.09
Public Administration	6995.48	4948.84	-8164.10	3772.22	3772.22	1.81	1.33	-0.48
Other Services	1624.78	450.72	-1761.79	3645.74	3645.74	1.14	1.10	-0.04
Total	66437.94	0.00	-29888.53	65463.01	65463.01	1.00	1.00	0.00

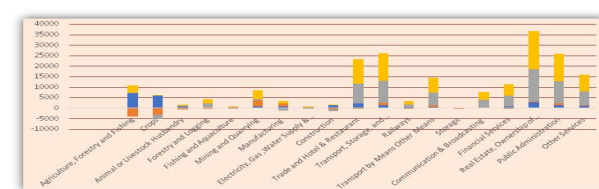
Economic Activity	NGH1	IM(I)	CS(I)	TOTAL SHR	Actual Increase in deficit r 2015-18	LQ wrt UP 2011-12	LQ wrt UP 2017-18	Difference in LQ
2015-18								
Agriculture, Forestry and Fishing	7297.82	-4624.40	117.47	3390.89	3390.89	1.19	0.85	-0.55
Crops	5788.34	-3187.34	-2095.83	606.17	605.17	1.44	0.64	-0.80
Animal or Livestock Husbandry	807.54	-528.20	131.07	527.01	527.01	0.98	0.33	-0.58
Forestry and Logging	182.60	-42.25	195.16	2055.70	2055.70	0.92	1.06	0.16
Fishing and Aquaculture	469.13	26.80	-143.51	350.52	350.52	0.92	2.53	1.61
Mining and Quarrying	694.24	8005.90	482.68	4125.43	4125.43	0.80	1.95	-1.15
Manufacturing	902.68	13911.58	-1209.29	1084.60	1084.60	0.86	0.13	-0.73
Electricity, Gas, Water Supply & Other Utility Services	242.28	346.10	-170.65	95.73	96.73	1.01	0.27	-0.72
Construction	1568.96	-730.85	-453.97	73.58	73.58	0.94	0.32	-0.52
Traze and Hotel & Restaurant	3113.08	-406.80	1926.85	11463.13	11463.13	0.90	1.10	0.40
Transport, Storage, and Communication	1288.10	1811.26	10375.53	12970.89	12970.89	1.04	1.08	0.06
Railways	852.07	-45.61	1127.50	12970.89	12970.89	1.77	1.78	0.01
Transport by Means Other Means	864.21	822.82	5881.18	7273.50	7273.50	0.94	1.73	0.79
Storage	24.41	-4.86	151.71	166.46	166.46	0.74	1.48	0.74
Communication & Broadcasting	1163.22	194.26	1598.82	3869.88	3869.88	0.46	2.00	1.54
Financial Services	787.12	-338.12	510.88	5227.68	5227.68	0.86	1.90	1.02
Real Estate, Ownership of Dwellings and Professional Services	2935.88	31.88	15395.22	18066.99	18066.99	0.97	1.57	0.70
Public Administration	1844.36	949.10	10565.64	12883.18	12883.18	1.14	2.07	0.93
Other Services	1182.20	1644.80	6627.80	7984.31	7984.31	1.00	1.70	0.68
Total	27616.00	0.00	61473.98	145151.30	145151.30	1.00	1.00	0.00



Western Region



Central Region



Bundelkhand Region



per capita GDP

Top 15

1. Gautambudh Nagar-Western region
2. Meerut-Western Region
3. Lucknow-Central Region
4. Agra-Western region
5. Amroha-Western region
6. Kanpur Nagar-Central Region
7. Ghaziabad-Western region
8. Mahoba-Bundelkhand region
9. Etah-Western region
10. Jhansi-Bundelkhand region
11. Bagpat-Western region
12. Buland Shahar-Western region
13. Sonbhadra-Eastern region
14. Muzaffar Nagar-Western region
15. Bareilly-Western region

In top 15

1. **WR : 10**
2. **ER : 01**
3. **BR : 02**
4. **CR : 02**

In bottom 15

1. **WR : 00**
2. **ER : 14**
3. **BR : 00**
4. **CR : 01**

Bottom 15

1. Bahraich-Eastern region
2. Balrampur-Eastern region
3. Sant Kabeer Nagar-Eastern region
4. Pratapgarh-Eastern region
5. Jaunpur-Eastern region
6. Ballia-Eastern region
7. Siddharth Nagar-Eastern region
8. Shravasti-Eastern region
9. Azamgarh-Eastern region
10. Deoria-Eastern region
11. Ghazipur-Eastern region
12. Maharajganj-Eastern region
13. Raebareilly-Central Region
14. Kushinagar-Eastern region
15. Gonda-Eastern region



graduate population ratio

Top 15

1. Ambedkar Nagar-Easten Region
2. Kaushambi-Eastern Region
3. Sitapur-Central Region
4. Chandauli-Eastern Region
5. Sultanpur-Eastern Region
6. Mainpuri-Western Region
7. Faizabad-Eastern Region
8. Etawah-Western Region
9. Mathura-Western Region
10. Ballia-Eastern Region
11. Auraiyya-Western Region
12. Pilibhit-Western Region
13. Mau-Eastern Region
14. Lucknow-Central Region
15. Kanpur Dehat-Central Region

In top 15

1. **WR : 05**
2. **ER : 07**
3. **BR : 00**
4. **CR : 03**

In bottom 15

1. **WR : 07**
2. **ER : 06**
3. **BR : 01**
4. **CR : 01**

Bottom 15

1. Barabanki-Central Region
2. Ghaziabad-Western Region
3. Siddharth Nagar-Eastern Region
4. Balrampur-Eastern Region
5. Gautambudh Nagar-Western Region
6. Chitrakoot-Bundelkhand region
7. Bagpat-Western Region
8. Buland Shahar-Western Region
9. Muzaffar Nagar-Western Region
10. Allahabad- Eastern Region
11. Sant Kabeer Nagar-Eastern Region
12. Basti-Easter Region
13. Deoria-Eastern Region
14. Meerut-Western Region
15. Saharanpur-Western Region



road density

Top 15

1. Sonbhadra-Eastern Region
2. Mainpuri-Western region
3. Etawah-Western region
4. Etah-Western region
5. Pratapgarh-Eastern region
6. Kanpur Nagar-Central Region
7. Kaushambi-Eastern region
8. Mirzapur-Eastern region
9. Chandauli-Eastern region
10. Kasganj-Western region
11. Faizabad-Eastern region
12. Jalaun-Bundelkhand region
13. Mahoba-Bundelkhand region
14. Banda-Bundelkhand region
15. Ambedkar Nagar-Eastern Region

In top 15

1. **WR : 04**
2. **ER : 07**
3. **BR : 03**
4. **CR : 01**

In bottom 15

1. **WR : 07**
2. **ER : 05**
3. **BR : 01**
4. **CR : 02**

Bottom 15

1. Moradabad-Western region
2. Meerut-Western region
3. Kheri-Central Region
4. Muzaffar Nagar-Western region
5. Maharajganj-Eastern region
6. Varanasi-Eastern region
7. Rampur-Western region
8. Gautambudh Nagar-Western region
9. Hardoi-Central Region
10. Ballia-Eastern region
11. Aligarh-Western region
12. Badaun-Western region
13. Ambedkar Nagar-Eastern Region
14. Jaunpur-Eastern Region
15. Jhansi-Bundelkhand region



ICDS* population coverage

*Integrated Child Development Scheme

Top 15

1. Farrukhabad-Western region
2. Hamirpur-Bundelkhand region
3. Ghaziabad-Western region
4. Lucknow-Central Region
5. Badaun-Western region
6. Moradabad-Western region
7. Bahraich-Eastern region
8. Mathura-Western region
9. Rampur-Western region
10. Firozabad-Western region
11. Kheri-Central Region
12. Amroha-Western region
13. Bareilly-Western region
14. Varanasi-Eastern region
15. Balrampur-Eastern region

In top 15

1. **WR : 09**
2. **ER : 03**
3. **BR : 01**
4. **CR : 02**

In bottom 15

1. **WR : 05**
2. **ER : 03**
3. **BR : 06**
4. **CR : 01**

Bottom 15

1. Jhansi-Bundelkhand region
2. Mahoba-Bundelkhand region
3. Bagpat-Western region
4. Jalaun-Bundelkhand region
5. Gautambudh Nagar-Western region
6. Etah-Western region
7. Chitrakoot-Bundelkhand region
8. Banda-Bundelkhand region
9. Chandauli-Eastern region
10. Lalitpur-Bundelkhand region
11. Kanpur Dehat-Central Region
12. Pratapgarh-Eastern region
13. Hathras-Western region
14. Auraiyya-Western Region
15. Shravasti-Eastern Region



loan per capita disbursement

Top 15

1. Farrukhabad-Western region
2. Hamirpur-Bundelkhand region
3. Ghaziabad-Western region
4. Lucknow-Central Region
5. Badaun-Western region
6. Moradabad-Western region
7. Bahraich-Eastern region
8. Mathura-Western region
9. Rampur-Western region
10. Firozabad-Western region
11. Kheri-Central Region
12. Amroha-Western region
13. Bareilly-Western region
14. Varanasi-Eastern region
15. Balrampur-Eastern region

In top 15

1. **WR : 09**
2. **ER : 03**
3. **BR : 01**
4. **CR : 02**

In bottom 15

1. **WR : 05**
2. **ER : 03**
3. **BR : 06**
4. **CR : 01**

Bottom 15

1. Jhansi-Bundelkhand region
2. Mahoba-Bundelkhand region
3. Bagpat-Western region
4. Jalaun-Bundelkhand region
5. Gautambudh Nagar-Western region
6. Etah-Western region
7. Chitrakoot-Bundelkhand region
8. Banda-Bundelkhand region
9. Chandauli-Eastern region
10. Lalitpur-Bundelkhand region
11. Kanpur Dehat-Central Region
12. Pratapgarh-Eastern region
13. Hathras-Western region
14. Auraiyya-Western Region
15. Shravasti-Eastern Region



LQ manufacturing

Top 15

1. Gautambudh Nagar-WR
2. Ghaziabad-Western Region
3. Moradabad-Western Region
4. Firozabad-Western Region
5. Kannauj-Western Region
6. Agra-Western Region
7. Auraiyya-Western Region
8. Kanpur Nagar-Central Region
9. Mathura-Western Region
10. Unnao-Central Region
11. Kanpur Dehat-Central Region
12. Amroha-Western Region
13. Lucknow-Central Region
14. Buland Shahar-Western Region
15. Meerut-Western Region

In top 15

1. **WR : 09**
2. **ER : 03**
3. **BR : 01**
4. **CR : 02**

In bottom 15

1. **WR : 05**
2. **ER : 03**
3. **BR : 06**
4. **CR : 01**

Bottom 15

1. Jhansi-Bundelkhand region
2. Mahoba-Bundelkhand region
3. Bagpat-Western region
4. Jalaun-Bundelkhand region
5. Gautambudh Nagar-Western region
6. Etah-Western region
7. Chitrakoot-Bundelkhand region
8. Banda-Bundelkhand region
9. Chandauli-Eastern region
10. Lalitpur-Bundelkhand region
11. Kanpur Dehat-Central Region
12. Pratapgarh-Eastern region
13. Hathras-Western region
14. Auraiyya-Western Region
15. Shravasti-Eastern Region



urbanisation rate

Top 15

1. Gautambudh Nagar-Western Region
2. Lucknow-Central Region
3. Kanpur Nagar-Central Region
4. Meerut-Western Region
5. Ghaziabad-Western Region
6. Agra-Western Region
7. Varanasi-Eastern Region
8. Jhansi-Bundelkhand Region
9. Bagpat-Western Region
10. Shahjahanpur-Western Region
11. Bareilly-Western Region
12. Aligarh-Western Region
13. Faizabad-Eastern Region
14. Saharanpur-Western Region
15. Firozabad-Western Region

In top 15

1. **WR : 09**
2. **ER : 03**
3. **BR : 01**
4. **CR : 02**

In bottom 15

1. **WR : 05**
2. **ER : 03**
3. **BR : 06**
4. **CR : 01**

Bottom 15

1. Sultanpur-Eastern Region
2. Shravasti-Eastern Region
3. Kushinagar-Eastern Region
4. Maharajganj-Eastern Region
5. Ballia-Eastern Region
6. Pratapgarh-Eastern Region
7. Basti-Eastern Region
8. Gonda-Eastern Region
9. Sant Kabeer Nagar-Eastern Region
10. Bahraich-Eastern Region
11. Siddharth Nagar-Eastern Region
12. Raebareilly-Central Region
13. Balrampur-Eastern Region
14. Ghazipur-Eastern Region
15. Jaunpur-Eastern Region



Proximity to the Delhi National Capital Region



2

Panel Regression with Random Effect

Part - II



table of variables

N.	Variable	Description	Notation & Measurement	Sign Expected
1	Per Capita GDP	Dependent (avg. income in thousand INR)	pci_ths (in thousand INR)	NA
2	Location Quotient	Independent (measure of manufacturing concentration)	Lq_manuf (ratio)	+
3	Number of Graduates	Independent (total number of graduates in total pop.)	Graduation_popu_ratio (percentage)	+
4	Loan Disbursement per Capita	Independent(loan disbursed per capita)	Loan_disbursal_percapita (in INR)	+
5	ICDS Density	Independent (pop. coverage per ICDS centr)	Icds_pop_coverage (number of persons)	-
6	Road Density	Independent (length of road per 100,000 pop.)	Road_density (in kms.)	+



variables

per
capita
GDP

Top 15

1. WR : 10
2. ER : 01
3. BR : 02
4. CR : 02

Bottom 15

1. WR : 00
2. ER : 14
3. BR : 00
4. CR : 01

grad
pop.
ratio

Top 15

1. WR : 05
2. ER : 07
3. BR : 00
4. CR : 03

Bottom 15

1. WR : 00
2. ER : 14
3. BR : 00
4. CR : 01

road
density

Top 15

1. WR : 04
2. ER : 07
3. BR : 03
4. CR : 01

Bottom 15

1. WR : 07
2. ER : 05
3. BR : 01
4. CR : 02

loan
per
capita
disb.

Top 15

1. WR : 09
2. ER : 02
3. BR : 03
4. CR : 01

Bottom 15

1. WR : 07
2. ER : 05
3. BR : 01
4. CR : 02

ICDS
pop.
cover

Top 15

1. WR : 05
2. ER : 07
3. BR : 00
4. CR : 03

Bottom 15

1. WR : 05
2. ER : 03
3. BR : 06
4. CR : 01

LQ
Manuf

Top 15

1. WR : 11
2. ER : 00
3. BR : 00
4. CR : 04

Bottom 15

1. WR : 02
2. ER : 08
3. BR : 05
4. CR : 00

rate
urbanis
ation

Top 15

1. WR : 10
2. ER : 02
3. BR : 01
4. CR : 02

Bottom 15

1. WR : 00
2. ER : 14
3. BR : 00
4. CR : 01



panel regression equation

PCI_{it} (per capita GDP) =

23.07704

+ [13.11767 * lq_manuf_{it}]

+ [1.832993 * $grad_popu_ratio_{it}$]

- [0.0010135 * $icds_pop_coverage_{it}$]

+ [0.0004966 * $loan_disbursal_percapita_{it}$]

+ [0.0491484 * $road_density_{it}$]

+ $v_{it} + \epsilon_{it}$

*
Location Quotient manufacturing

+
percentage of graduates in population

-
number of persons per ICDS centre

+
loan disbursal in rupees per capita

+
road length in per 100,000 population_{it}



panel regression table

With 90% significance level

```
. xtreg pci_ths lq_manuf grad_popu_ratio icds_pop_coverage loan_disbursal_percapita road_density, re level(90)

Random-effects GLS regression              Number of obs   =       483
Group variable: id                        Number of groups =        69

R-sq:                                     Obs per group:
  within = 0.1912                          min =           7
  between = 0.7864                          avg =          7.0
  overall = 0.6942                          max =           7

Wald chi2(5) =       211.79
Prob > chi2   =       0.0000

corr(u_i, X) = 0 (assumed)
```

pci_ths	Coef.	Std. Err.	z	P> z	[90% Conf. Interval]	
lq_manuf	13.11864	3.004059	4.37	0.000	8.177404	18.05988
grad_popu_ratio	1.836249	.7381286	2.49	0.013	.622136	3.050363
icds_pop_coverage	-.001013	.000573	-1.77	0.077	-.0019555	-.0000706
loan_disbursal_percapita	.0004965	.0000405	12.26	0.000	.0004299	.0005631
road_density	.0491382	.0254117	1.93	0.053	.0073396	.0909368
_cons	23.07145	6.602716	3.49	0.000	12.21095	33.93195
sigma_u	17.389552					
sigma_e	10.050054					
rho	.74961934	(fraction of variance due to u_i)				

3

findings & policy implications

Conclusion



outcomes of regression model explaining the effect of independent variables

1

Location quotient manufacturing has a huge positive impact on the per capita GDP

2

Human capital – the percentage of graduates on population and ICDS coverage of population per centre, both have a positive impact on the per capita GDP

3

Road density is one of the best indicators of infrastructure penetration and spending also have a positive impact on per capita GDP

4

Higher loan disbursement per capita is a sure sign of better levels of trust in the lending sector and effective operation of local social networks

S.No.	District	Product Name
13.	Balrampur	Food Processing (Pulses)
14.	Banda	Shazar Stone
15.	Barabanki	Textile Products (Stole)
16.	Bareilly	Zari-Zardozi
17.	Basti	Wood Craft
18.	Bhadoi	Carpet
19.	Bijnor	Wood Craft
20.	Bulandshahar	Pottery
21.	Chandauli	Zari-Zardozi
22.	Chitrakoot	Wooden Toys
23.	Deoria	Decorative Product
24.	Etawah	Textile Products
25.	Etah	Ghungroo Ghanti (Brass Bell)
26.	Faizabad	Jaggery
27.	Farrukhabad	Block Printing
28.	Fatehpur	Bed Sheets
29.	Firozabad	Glass Ware
30.	Gautam Budh Nagar	Readymade Garments
31.	Ghazipur	Wall Hanging
32.	Ghaziabad	Engineering Goods
33.	Gonda	Food Processing (Pulses)
34.	Gorakhpur	Terracotta
35.	Hamirpur	Leather Juti
36.	Hapur	Home Furnishing
37.	Hardoi	Handloom
38.	Hathras	Hing 'Asafoetida'
39.	Jalaun	Handmade Paper Art
40.	Jaunpur	Dari, Carpet
41.	Jhansi	Soft Toys
42.	Kannauj	Scent/itar
43.	Kanpur Dehat	Utensils
44.	Kanpur Nagar	Leather Products

S.No.	District	Product Name
45.	Kasganj	Zari Zardozi
46.	Kaushambi	Food Processing, (Banana)
47.	Kushinagar	Banana Fiber Products
48.	Lakhimpur Kheri	Tribal Craft
49.	Lalitpur	Zari Silk Sarees
50.	Lucknow	Chicken Kari & Zari Zardozi
51.	Maharaj Ganj	Furniture
52.	Mahoba	Gaura Stone Craft
53.	Mainpuri	Tarkashi Art
54.	Mathura	Sanitary Fittings
55.	Mau	Powerloom Textile
56.	Meerut	Sports Products
57.	Mirzapur	Carpets
58.	Moradabad	Metal Craft
59.	Muzaffarnagar	Jaggery
60.	Pilibhit	Flute
61.	Pratapgarh	Aamla Products
62.	Raebareli	Wood Crafts
63.	Rampur	Patch Work
64.	Saharanpur	Wood Crafting
65.	Sambhal	Handicraft (Horn Bone)
66.	Sant Kabir Nagar	Brassware Craft
67.	Shahjahanpur	Zari-Zardozi
68.	Shamli	Rim And Axle
69.	Shravasti	Tribal Craft
70.	Siddharthnagar	Kala Namak Rice
71.	Sitapur	Dari, Carpet
72.	Sonbhadra	Kaleen, Carpets
73.	Sultanpur	Moonj Products
74.	Unnao	Zari Zardozi
75.	Varanasi	Banarasi Silk Saree



S.No.	District	Product Name
1.	Agra	Leather
2.	Aligarh	Lock And Hardware
3.	Allahabad	Moonj Products
4.	Ambedkar Nagar	Textile Products
5.	Amethi	Moonj Products
6.	Amroha	Musical Instrument (Dholak)

S.No.	District	Product Name
7.	Auraiya	Food Processing (Desi Ghee)
8.	Azamgarh	Black Clay Pottery
9.	Budaun	Zari-Zardozi
10.	Baghpath	Home Furnishings
11.	Bahraich	Crafts (Wheat Stalk)
12.	Ballia	Bindi

a



Industry support programmes can be formulated based on the indications from the Shift-share and LQ analysis.

Across the regions, primary, secondary, and tertiary sectors have varying degrees of contribution depending upon the local specialization

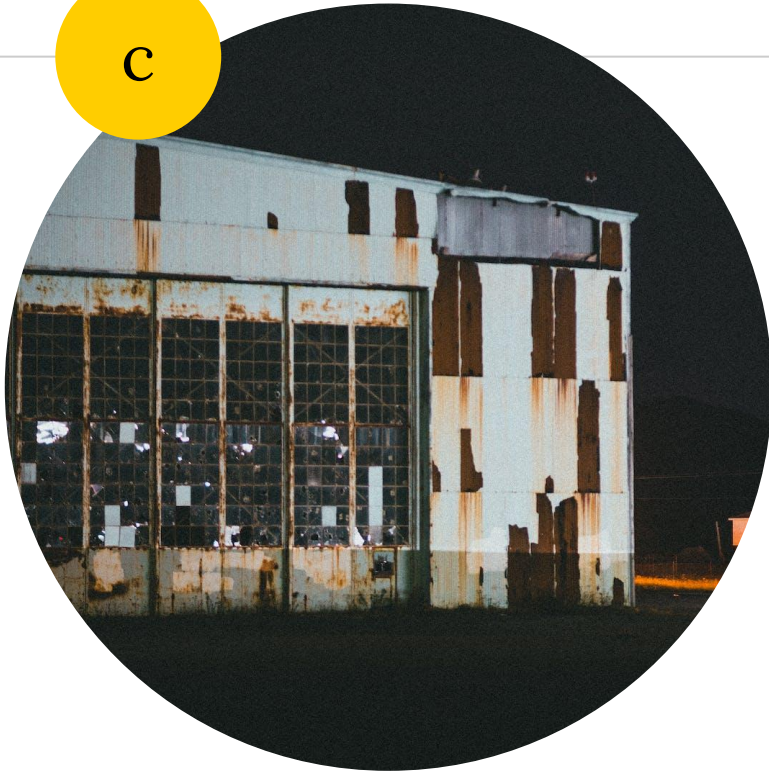
b



Despite a slightly negative shift in manufacturing and agriculture, **the western region retains a positive LQ value**

However bulk of the regional growth was driven by national growth and industry-mix .

C



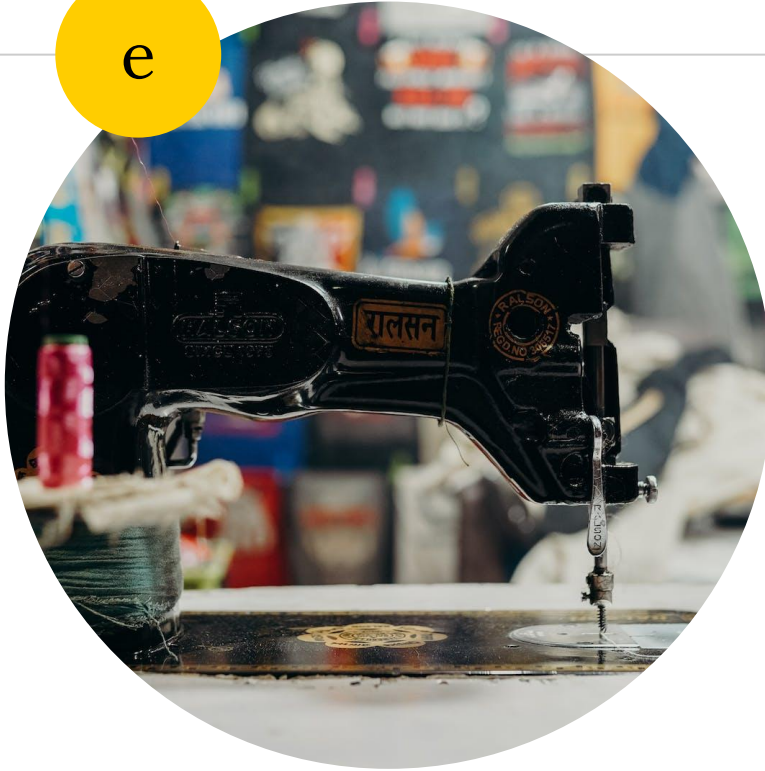
Eastern, Central and Bundelkhand [Southern] regions have shown a negative proportional shift in the secondary sector including the manufacturing sector

d



The primary sectors* will remain less productive unless diversified into agro-industry or horticulture.

e



The investment policies should focus on the promising sectors with higher LQ or positive contribution from local share.

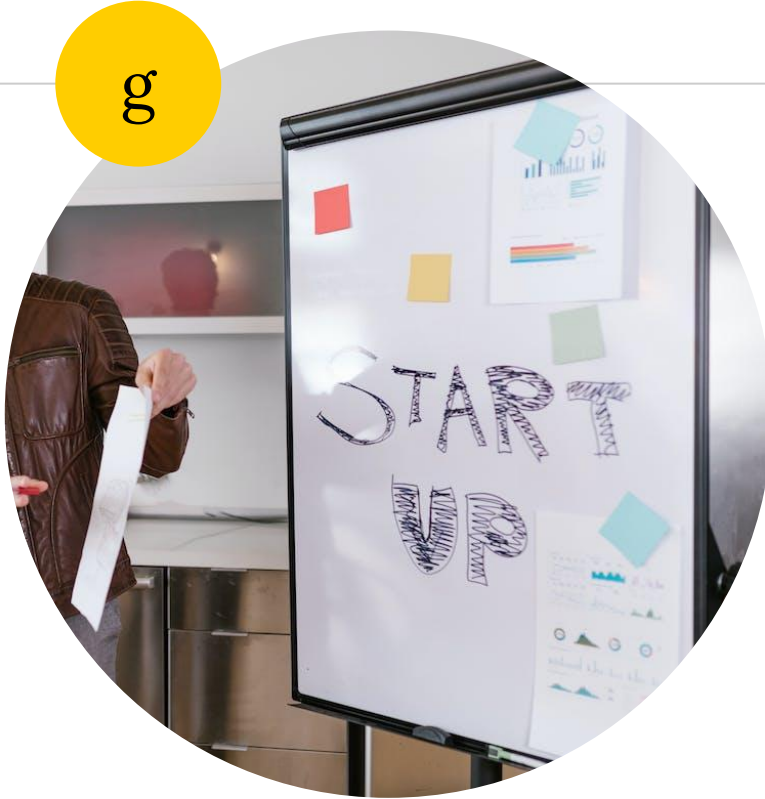
The sectors contributing highest GDP have a definite comparative advantage and efforts should be made to further strengthen those sectors for the regions concerned.

f



At the same time, resources should be reallocated from the unviable sectors to more viable sectors.

09




The government should focus on drastically improving the higher education ecosystem.

Emphasis on technical and professional courses that incorporate innovation and entrepreneurship should be given.

h



Similarly, the government shall **prioritize spending on useful infrastructure facilities and health facilities** from a long-term perspective.

An aerial night photograph of a modern park and highway interchange. The park features winding paths, green lawns, and a circular plaza with a large 'E' logo. The highway interchange is illuminated with warm yellow lights, and the bridge structure is lit with vibrant green lights. The background shows a city skyline under a dark blue sky.

Increasing institutional capacity remains a pressing policy issue, and if addressed suitably, it can have a huge overall impact on the local economy





limitations & further research

1

For Shift-share and LQ analysis, **employment data at the district level is not accessible.** Data on productivity was found to be highly inconsistent and could not be used.

2

With panel data, it is hard to establish a causal relationship. The time-series data captures the variation over time, but **may not reflect the true relationship between variables.**

3

For future research, individual **district-level analysis** can be undertaken. A deeper, **industry-specific analysis** can be undertaken to discover specialization tendencies in the local economy.

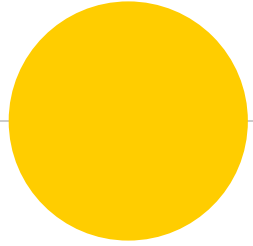
4

For further research the importance of **non-economic factors such as human capital, social capital, and culture,** etc for regional growth can be ascertained and theorized

5

For non-metropolitan regions a **new framework on the nature of small-town urbanization needs to be developed** to study the growing divergence in growth and subsequent inequality caused by it.

Small regions with urban cores should also be considered as critical links & potential sites of economic growth of regions that fall between the 'urban' and 'rural' continuum.



thank you

questions ?

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