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Cultural diversity and economic growth in India: Evidence from state level data

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I am indeed grateful to the Institute of Indian Geographers, the Prof. Aijazuddin Ahmad Memorial Fund for Social Geography, and the Department of Geography, North-Eastern Hill University, Shillong, for this honour and privilege of giving me the opportunity to deliver the 2nd Prof. Aijazuddin Ahmad Memorial Lecture in the presence of esteemed geographers, social scientists, and the honourable office bearers of the IIG.

Prof. Ahmad was one of the brightest stars in the galaxy of Indian and South Asian geographers—a true polymath and philosopher whose understanding and depth of social geography and philosophy were far ahead of his time. He shaped a generation of geographers who today are not only advancing his insights into socio-spatial relations, developing scientific temper in society, and excelling in research, but are also speaking for the marginalized and contributing to nation-building and global social solidarity.

Prof. Ahmad wrote and spoke on numerous themes. His lectures and speeches, whether in classrooms or conferences, inspired thousands of students. He actively engaged with his students and colleagues in developing a deeper understanding of socio-spatial realities and furthering this knowledge through public engagement and scholarly publications. Though he taught many geography-related courses and explored various topics throughout his academic career, his most significant contribution remains the revival and popularisation of Social Geography. His book, Social Geography (2002), remains a milestone in the geographical interpretation of social facts, their fusion, their networks, and their diffusion through time and space. As a humanist Prof. Ahmad viewed diversity as the essence of society—an intrinsic, not merely instrumental, element.

Today's lecture in the memory of this great scholar-teacher explores the direct and indirect channels through which cultural diversity influences economic growth in the Indian regional context from 1991 to 2022.

Introduction

Cultures have been the core of our socio-economic and political lives across nations. Long back, Edward Burnet Taylor (1871) argued, "Culture or Civilization…is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (p.1). Aristotle believed

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that cultural diversity leads to social conflict (Lian and Oneal, 1997). Aristotle made observations based on the society of the time he lived in, and that society was largely based on what can be called 'accumulation through dispossession' or 'looting and gathering' with a nomadic and primitive agricultural base, and/or with little trade and innovations. In some intellectual traditions, culture has been understood as static rather than dynamic. However, cultures are hardly static. Cultures change, and change faster than we imagine though some of the elements of a specific culture can persist for a long time. This led to Max Weber having adverse ideas on the relationship between the religions of Asia and development (Weber 1951, 1958). Beyond the conflict theory but within the homogeneity perspective, some of the studies (Landa, 1981; Aoki, 2010) have argued that homogenous cultures reduce the cost of transactions through trusts, a factor more favourable to economic growth.

Hoselitz (1952) put forward a more plausible and conditional argument when he said that porous culture or assimilative cultures, allowing dissemination of technical progress, innovations, social mobility and economic and political institutions of change, can be conducive to development. W.W. Rostow's 'The Stages of Economic Growth' (1960) outlines cultural and social transformations as both precondition and product of economic development. Growth is not just monetary—it requires shifts in attitudes, institutions, and openness to change. He believed that societies must gradually leave behind traditional mindsets to embrace modern norms if they wish to progress economically. External influences often accelerate this shift.

The rise of many countries of the West, especially the USA, and many cities worldwide is based on the rise of their cultural and ethnic diversities, which have driven innovations propelling economic growth. Rodríguez-Pose and von Berlepsch (2019), in a study on the USA, found that "counties with a more heterogeneous population composition over 130 years ago are significantly richer today" (p.873). Similarly, Alesina and La Ferrara (2005) demonstrate that although New York and Los Angeles have had "troubled" racial relations history, they are also "constant producers of innovation in the arts and business" (p.762). In contrast to this, African countries, despite rich ethnic and cultural diversity, are marked by tragedies of clashes compromising their economic development (Alesina and La Ferrara, 2005).

India is a land of cultural diversity. Historically, it has become home to different cultures and communities (Subbarao, 1956). Thousands of dialects and variants of languages are spoken by a multitude of communities. As a nation of nations, India has 22 constitutionally recognised languages and 121 mother tongues with more than 10,000 speakers (Census of India 2011a). With a population of about 1.4 billion, it has followers of world's all major religions in sizeable numbers. If diversity is the key resource of modern times, it can play a significant role in shaping India's economic growth story in the coming days.

The present paper, in this context of the unsettled debate on the relationship of cultural diversity with economic growth and development, examines the role of diversity in driving India's economic growth using data from 20 major selected states. By empirically

verifying the relationship between cultural diversity and economic growth the paper contributes to the emerging theoretical and empirical debates, and argues that India unlike migration based diversities in USA, Canada or even Europe, has a cultural diversity that is organically evolved and hence displays a different relationship with growth.

The rest of this paper is organised as follows. Section 2 presents a review of the literature elaborating on the role of diversity and the channel through which it impacts economic growth, while section 3 briefly discusses the diversity of India. Section 4 deals with the data and methods used in this paper. Section 5 deals with the results of the empirical analysis and its discussion, while Section 6 concludes the paper.

Earlier studies

One set of literature argues that cultural diversity adversely affects the quality of governance, and economic policies, and thus economic growth and leads even to civil wars. Alesina *et al.* (2001) find a negative relationship between ethnic fractionalisation and the size of the government's social spending and transfer as a percentage to GDP. Alesina and La Ferrara (2005, p.776) argue that this may be because of 'altruism does not travel well across ethnic lines" and Alesina and Glaeser (2004) present examples of Europe and USA demonstrating that smaller welfare spending and distributive policies of the USA negatively correlate with its higher ethnic and cultural diversity. Nancy Burn (1994) demonstrates that in the USA, public good provisions are lower in more racially diverse American cities. Alesina and La Ferrara (2002) also demonstrate that governments distribute welfare supports and income less in racially diverse cities as the "white majority feels that redistributive flows would favour a racial minority" (p.780). This issue has been well brought out in several reports and studies in India, including Sachar Committee Report (2006), Mahmoodur Raham Committee Report (2013), and Amitabh Kundu Committee Report (2014) which show that religious minority concentrated towns and districts in India have lower availability of productive public goods, and their quality is also poor.

Contrastingly, more recent studies have shown that cultural and ethnic diversities have not been barriers in all countries and regions in influencing economic development and social progress; but have positively contributed to and facilitated it.

Alesina and La Ferrara (2005) argue that diversity translates into increased productivity (p.763) as the diverse groups endowed with different productive skills are able to better solve economic problems. Hong and Page (1998) argue that cognitively diverse problem solvers may lead to the optimal solution of complex problems, and a "more diverse group of people with limited abilities can outperform a more homogeneous group of high-ability problem solvers" (Alesina and La Ferrara, 2005, p.766). In other words, variety of individual skills, increases total output (Alesina *et al.*, 2000). The heterogeneity leads to innovation, enhancing productivity (Lazear, 1999a; 1999b). Bove and Elia (2017), using data from 135 countries for the period 1960-2010 of migrants' stock find that cultural heterogeneity positively impacts the growth rate of the Gross Domestic Product (GDP), and interestingly this impact is higher in the case of developing countries,

which often have been categorised as being negatively affected by the diversity in several studies. Further, Chris Clarke, in a study of 85 UK councils, using data from 2011 and 2019, at the periphery of megacities, found that "migration and ethnic diversity are inextricably linked to economic growth in … towns and regions" (Stones, 2021).

Cultural diversity may be beneficial at the higher level of development (Alesina and La Ferrara, 2005, p.763) as it translates into economic growth in developed countries like the USA, but becomes a source of conflict in underdeveloped countries, as in African countries. This may be due to (i) the skill complementarity effect – as the developed economies are diversified and have (ii) evolved institutions of conflict management, which reduce the adverse effects of cultural diversities. Kundu (2003) argues that for competitive advantage (productivity) firms must hire and retain culturally diverse employees. Jauhari and Singh (2013) show that a culturally diverse workforce in Indian IT industries leads to increased performance. William Easterly (2001) demonstrates that good institutions are key to mitigating the adverse impact of diversity-channelised conflict on economic growth. Good institutions can reduce the negative effects of ethnic and cultural diversity to zero.

Empirical studies on India on this issue are few. Shaban and Khan (2022), using state-level data for 1991-2018 and the panel regression method, have shown that cultural diversity positively impacts per capita income in the states. This however requires further corroboration from more studies at both macro and micro level.

Sources of cultural diversity in India

India is culturally diverse. The geography of Indian languages shows a history that goes back to thousands of years (Ahmad, 2002). The diversity and complexity of Indian languages can be understood from the fact that according to the Census of India (2011b), there are 19,569 different dialects spoken in India. These dialects form the languages and are significant constituents of them- giving them variants and varieties. The Dravidian languages in the southern peninsula, such as Telugu, Kannada, Malayalam, and Tamil, are believed to have links with Indus Valley Civilisation. In the north, Hindi and Urdu, spoken by millions is based on *Khadi Boli* and has diverse influences from Sanskrit, Persian and Arabic among others. Other languages related to the Indo-Iranian branch include Kashmiri, Punjabi, Sindhi, Gujarati, Marathi, Oriya, Bengali, Nepali, and Assamese. In the northern and north-eastern regions, Tibet-Burmese languages from the Sino-Tibetan family are common. Further, in some remote areas of Central and North-East India, tribes from the Munda and Mon-Khmer groups speak Austro-Asian languages. Several languages spoken by some of the most numerous tribal populations have their origins in Dravidian languages. The diversity of India can be comprehended from the fact that many speak a dialect at home that belongs to the region their family left long ago, watch English television shows, and use the state's official language at work. It is not uncommon to find that several families speak one language (e.g. mother tongue) at home, another in the market (e.g. Hindi, Punjabi, Hindustani) and a third in school (English and/or the regional language).

The north Indian elites in Delhi decided to make Hindi the official language at the time of independence. At the same time, the southern states pushed for English as the primary official language at all India level. It was decided that English would continue to be India's official language for a short while. The national government uses Hindi and English, but the Indian Constitution has recognised 22 official languages. Each state has attempted to have at least one of its languages recognised as an official language under the Constitution.

Most states have official languages that are spoken by the majority of their citizens, particularly the bigger ones, which are spoken by over 80% of the population, such as Tamil in Tamil Nadu, Telugu in Andhra Pradesh and Telangana, Hindi in Uttar Pradesh, or Gujarati in Gujarat. However, there are also states where only a small percentage of people of speak the official language but use local dialects in everyday communications, such as Hindi in Jharkhand or Urdu in Jammu & Kashmir. The designation of the regional language as the official language in states has bolstered an already robust linguistic identity and promoted regional cultural innovation and creativity in a variety of fields, including theatre, cinema, literature, and vocal music – be it Bengali, Tamil, Malayalam, Kannada, or the languages of Northeastern states.

In this diverse linguistic environment, the percentage of major languages has decreased in some of the states chosen for the study between 1991 and 2011 (particularly in highly economically developed states). These states include Maharashtra where the percentage Marathi speakers fell from 73.34% in 1991 to 68.93% in 2011, in Gujarat where Gujarati speakers fell from 91.49% to 85.97%, Haryana where speakers of Hindi fell from 91% to 88.05%, and Punjab where proportion of Punjabi speakers fell from 92.22% to 89.82% as a result of both native speakers' adaptation of other languages and interstate migration.

Rajasthan and Orissa similarly saw a decrease in speakers of major mother tongues between 1991 and 2011. Additionally, the number of mother tongues with more than 10,000 speakers has grown in each of the major states chosen for this study. For example, the number of mother tongues with over 10,000 speakers has grown from 43 in 1991 to 91 in Gujarat, from 68 to 101 in Uttar Pradesh, from 77 to 106 in Delhi, and from 43 to 79 in Kerala over the same period.

The second indicator of India's immense cultural diversity is its religious diversity. The predominant religion in India is Hinduism. According to the Census of India (2011a), 79.8% of the nation's population is its adherents. It is a polytheistic faith that coexists with several other religions and has adapted to syncretism. Islam is another major religion in India, which has about 140 million (14.2%) adherents. Other religions have fewer followers, such as Buddhism (0.7%), Jainism (0.4%), Sikhism (1.7%), Christianity (2.3%), and others (0.9%). Even smaller numbers also profess other religions, especially animistic cults practised by tribals.

Each state has a varied percentage of Hindus. For instance, according to the Census of India (2011a), Muslims make up the majority in the erstwhile Jammu & Kashmir state, and in certain Northeastern states, followers of Christianity are in the majority. In Punjab, followers of Sikhism are in majority,

and Hindus constitute 35.5% in Punjab and 54.7% in Kerala. In some coastal areas and Northeastern states, a sizable Christian minority has existed since the apostle Thomas founded the Syrian church. In the Himalayan region bordering China, Buddhism is the most practised religion. Jharkhand is home to a sizeable tribal population that either practices animistic religion or has followers of Christianity. Though founded in the sixth century BCE, Jainism has fewer followers in India, and a similar story is that of Zoroastrianism and Judaism.

Despite their small numbers, Zoroastrianism and Jainism have had a significant economic impact on some of the states and towns they live in. The Muslims in medieval times had similar economic impacts and created vibrant crafts, cities and irrigation and transport networks, among others. In Gujarat and Rajasthan, the Jains are very significant to the economy, whereas in cities like Mumbai, these are Parsis or Zoroastrians.

The Indian Constitution protects linguistic and religious diversity. The Constitution promotes diversity, and India's successive Governments have tried to uphold it. The Constitution's pillars are equality (of status and opportunity), liberty (of thinking, expression, belief, faith, and worship), and justice (social, economic, and political). Article 350A of the Constitution explicitly instructs the government to support and educate primary school-aged children in their mother tongues. At the same time, Article 350B ensures the preservation and advancement of the languages of linguistic minorities (Government of India, 2019). Part III of the Constitution on Fundamental Rights specifically recognises the nation's linguistic, religious, and ethnic diversities and guarantees their protection.

Data and method

We have attempted to quantify Indian diversity by creating an index of fractionalization. The index is then used in regression equations to find out its impact on economic growth. While selecting the states, variables, and the method of measurement of the impacts or regression estimators, we had several considerations. As we suspect endogeneity in general regression equations, we have used simultaneous equations with instrumental variables. We have estimated two models with simultaneous equations, first for cultural diversity (CD) and then another for decomposed cultural diversity, that is, religious diversity (RD) and language diversity (LD).

$$g=\alpha_1+\beta_1\, CD+\beta_2\, lnPCI_{-1}+\beta_3\, lnGCFPC+\beta_4\, HC+\beta_5\, MR+\beta_6\, PF+\beta_7\, t+\varepsilon_1$$

$$CD=\alpha_2+\beta_8\, g+\beta_9\, lnPCI+\beta_{10}\, t+\varepsilon_2$$

$$MR=\alpha_3+\beta_{11}\, CD+\beta_{12}\, t+\beta_{13}\, Coast+\varepsilon_3$$

$$PF=\alpha_4+\beta_{14}\, CD\times HC+\beta_{15}\, t+\varepsilon_4 \qquad .....(1)$$

The *PCI*, Lag of PCI (PCI_{-1}), *GCFPC* is used in the natural log form, and therefore, *ln* is prefixed before them in the equation. As our data is expected to show a trend, we have used time to capture the same and denoted the same with *t*. In the equation, endogenous variables are g, *CD*, *MR*, and *PF*, while the exogenous variables are $lnPCI_{-1}$, *lnGCFPC*, *HC*, *t*, *PCI*, *lnPCI*, *RD*, *CDxHC*, *Coast* (dummy variable, it equals 1 if the states have a coastal location, else = 0). $\alpha_1,\alpha_2,\ldots\ \alpha_4$ show the intercepts, $\beta_1, \beta_2,\ldots\ \beta_{15}$ represent the regression coefficients, and $\varepsilon_1, \varepsilon_2\ldots\ \varepsilon_4$ are the error terms. (See Table 2 for abbreviations of variables used).

And for the decomposed diversity,

$$g=\pi_1+\lambda_1\ RD+\lambda_2\ LD+\lambda_3\ lnPCI_{-1}+\lambda_4\ lnGCFPC+\lambda_5\ HC+\lambda_6\ MR+\lambda_7\ PF+\lambda_8\ t+\xi_1$$

$$MR=\pi_2+\lambda_9\ RD+\lambda_{10}\ LD+\lambda_{11}\ RD\times HC+\lambda_{12}\ LD\times HC+\lambda_{13}\ lnPCI+\lambda_{14}\ t+\lambda_{15}\ Coast+\xi_2$$

$$PF=\pi_3+\lambda_{16}\ RD+\lambda_{17}\ LD+\lambda_{18}\ RD\times HC+\lambda_{19}\ LD\times HC+\lambda_{20}\ t+\xi_3 \quad ...(2)$$

Where Endogenous variables are g, *MR*, *PF*, and exogenous variables are *RD*, *LD*, PCI_{-1}, *lnGCFPC*, *HC*, *t*, *RDxHC*, *LDxHC*, *Coast*, and *LnPCI*. $\pi_1,\pi_2,\ldots\ \pi_3$ show the intercepts, $\lambda_1,\lambda_2,\ldots\ \lambda_{20}$ represent the regression coefficients and $\xi_1,\xi_2\ldots\ \xi_3$ are the error terms. These two equations have been modelled as cross-sectional three-stage least-squares regressions (3SLS).

The religious and language diversities are computed using the fractionalization method, popularly known as the Herfindahl index, specified as follows

$$F = 1-\sum^{j}_{i=1} p_i \quad ...(3)$$

Where *p* is the proportion of the group i…j over the total population. This shows the probability that two randomly drawn individuals belong to different social and ethnic groups (Alesina and La Ferrara, 2005). The value of *F* will be 0 if the society consists of only one group and a maximum of 1 when there are several small groups. We have averaged the RD and LD computed with the fractionalization mentioned above and called it CD. We have also tested the stationarity of the variables using several unit root tests.

Results and discussion

The selected 20 states of India have grown with considerably higher growth rates, that is, about 5% per annum during the period 1991-22. The GCF per capita is very low in Indian states; on average, this has been at about Rs. 553 (antilog 6.749) per capita per year. Despite the overall observable diversity, the religious and language diversity indices are low in India as both have the presence of one dominant group – followers of Hinduism (79.8% in 2011) in the case of religion, and

Table 1: Descriptive statistics and unit root test

Variable	Obs.	Mean	Std. Dev.	Min	Max	Levin, Lin, and Chu (LLC) panel unit root test
Average annual exponential growth rate (g)	160	4.831	3.259	-3.334	18.177	-5.580***
Log of lag PCI ($lnPCI_{-1}$)	160	10.802	0.649	9.100	12.471	-1.697**
Log of Per capita income (lnPCI)	160	10.868	0.648	9.216	12.421	-46.973***$
Religious diversity (RD)	160	0.295	0.141	0.081	0.605	-220.00***$
Language diversity (LD)	160	0.302	0.157	0.054	0.679	-2.924**
Cultural diversity (CD)	160	0.298	0.114	0.143	0.596	-4.802***
lnGCFPC	160	6.749	1.422	0.000	9.467	-6.267***
Human capita (HC)	160	67.443	15.029	34.117	98.149	-6.646***
Political fragmentation (PF)	160	4.005	2.021	1.000	9.000	-20.681***
Murder rate (MR)	160	3.171	1.319	0.850	7.625	-9.035***

Note: $ shows trend stationary; the statistics are computed from the average of variables (except $lnPCI_{-1}$) over the 8 periods of 4 years each

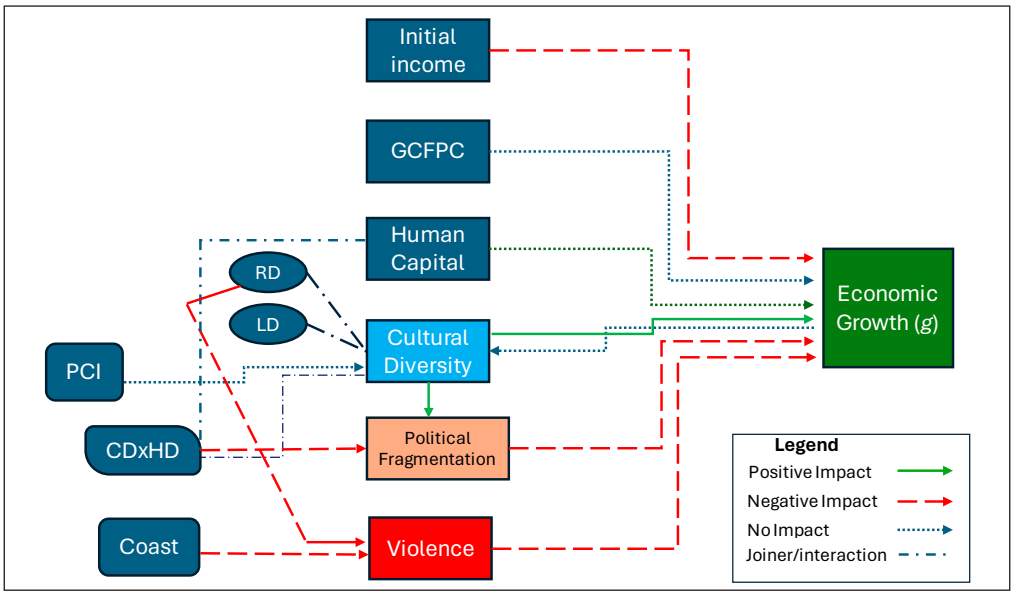

Fig. 1: Summary relationship between growth, CD and other determinants

Source: Based on statistical results of 3SLS presented in Table 2

Hindi (43.6% of the population in 2011) in the case of mother tongue. Political fragmentation in India has been moderate; on average, 4 political parties have won at least one seat in the selected states during the period. The panel unit root test also shows that variables are stationary at level (Table 1).

It is important to note here that in 3SLS, the R-square, a goodness of fit statistic, is of little relevance and can even be negative (Stata Corp, 2024). The individual coefficients and their statistical significance remain more meaningful in structural equations. However, we have reported the R-squares for each of the equations of the system. The Chi-square tests show whether each sub-equation is statistically significant, and the Hansen-Sargan over identification statistics show whether the system of equations is identified (it needs to be just or overidentified for the estimation).

The estimations show a statistically significant positive impact of cultural diversity on per capita income growth (Table 2 and Fig. 1). The coefficients are significantly higher, showing that a marginal increase in diversity will lead to a very big increase in the growth rate of PCI (also see Fig. 2). The change in diversity often happens due to migration, and migrants often move to urban centres. About 70% of India's GDP comes from urban centres. This increase in diversity may be a pointer to the increase of CDs in urban centres, which drives economic growth. However, the CD is not statistically affected by per capita income level and growth rates (sub-equation 2). This shows that inter-state migration has not been that significant in India during 1991to 2024 to change the cultural diversities of the states in major ways (Table 3). In almost three decades, the change in religious diversity (fractionalisation) of

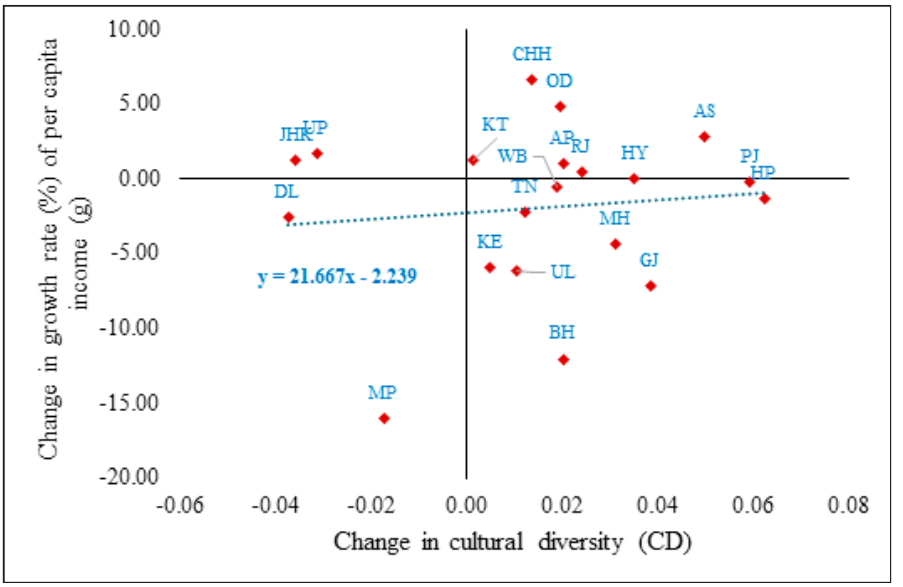

Fig. 2: Relationship between change in CD and change in g between 1991-94 and 2019-22

Source: Author.

Note: See Table 3 for abbreviations of the states/UTs;

any of the states has not been above 0.06, and in language diversity above 0.10., whereas changes in religious diversity, though very small, are positive (showing more re-distribution impact or an increase in the size of minority religious groups) and in the case of language diversity, it has been negative (showing more consolidation impact and homogenisation). Several states have experienced negative changes in language diversity, and these are Chhattisgarh, Delhi, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu, UP, Uttaranchal and West Bengal. This shows that speakers of some smaller mother tongues in these states have shrunk, or the dominant mother tongue speakers have increased. So, the religious and language diversities in India are changing, though imperceptibly, but in reverse ways (Fig. 3) – as the religious diversity increases, the language diversity declines.

The coefficient of $\ln PCI_{-1}$, as expected, is negative, pointing that the growth rate among the states with higher initial PCI is lower than the states with lower initial PCI in each of the periods. This shows well-known conditional convergence tendencies among regions. The lnGCF and HC are not able to impact the growth as expected, but political fragmentation (PF) and murder rate (violence) negatively impact the economic growth rate.

Some hold the view that cultural diversity leads to violence and instability in a society (Alesina and La Ferrara, 2005). African countries have been the usual examples. However, in India, overall cultural diversity does not cause instability or violence— the

Table 2: SLS estimation of the impact of CD on economic growth and channel effects

Equations	Coefficient	P>z
Eq 1: Annual exp. growth rate (%) of PCI (g)		
Cultural diversity (CD)	29.798	**0.007**
Lag of PCI ($lnPCI_{-1}$)	-5.998	**0.006**
ln Gross capital formation per capita (lnGCFPC)	-0.151	0.692
Human capital (HC)	-0.040	0.468
Muder rate (MR)	-6.091	**0.000**
Political fragmentation (PF)	-4.828	**0.000**
Trend (t)	-1.238	**0.002**
Constant	108.694	**0.000**
R-square	-9.071	
Chi-quare	51.74	**0.0000**
Root mean squared errors (RMSE)	10.311	
Eq 2: Cultural diversity (average of religious and language fractionalisation)		
Average Growth Rate of PCI (g)	0.001	0.771
ln average PCI	-0.013	0.456
Trend (t)	0.004	0.399
Constant	0.419	**0.019**
R-square	0.006	
Chi-quare	0.830	0.842
RMSE	0.113	
Eq 3: Violence (murder rate)		
Religious diversity (RD)	-1.776	**0.001**
Coast (coastal=1; no-coastal=0)	-0.936	**0.000**
Trend (t)	-0.271	**0.000**
Constant	5.289	**0.000**
R-square	0.342	
Chi-quare	115.480	0.000
RMSE	1.066	
Eq 4: Political fragmentation		
Cultural diversity (CD)	11.345	**0.000**
CDxHC	-0.070	**0.081**
Trend (t)	-0.119	0.142
Constant	2.571	**0.000**
R-square	0.183	
Chi-quare	41.300	**0.000**
RMSE	1.820	
For the whole equation		
Hansen-Sargan over identification statistic	300.092	**0.000**

Note: Religious diversity is used in the Eq 3 in order to make the equation identified and also to avoid multicollinearity. The CD in rotation with other variables (results not presented here) is not found to be statistically significantly associated with the murder rate.

Table 3: Change in religious and language fractionalisation (diversity) index among Indian states between 1991-94 and 2022-24.

States	Religious fractionalisation			Language fractionalisation		
	1991-94	2019-22	Change	1991-94	2019-22	Change
Andhra Pradesh (AP)*	0.197	0.217	0.020	0.276	0.297	0.021
Assam (AS)	0.469	0.525	0.056	0.623	0.667	0.045
Bihar (BH)	0.296	0.295	0.000	0.348	0.389	0.041
Chhattisgarh (CHH)	0.102	0.162	0.059	0.313	0.281	-0.031
Delhi (DH)	0.292	0.318	0.026	0.326	0.225	-0.101
Gujarat (GJ)	0.192	0.214	0.021	0.176	0.232	0.056
Haryana (HY)	0.201	0.241	0.039	0.174	0.206	0.031
Himachal Pradesh (HP)	0.081	0.099	0.017	0.206	0.313	0.108
Jharkhand (JHK)	0.492	0.509	0.017	0.637	0.549	-0.088
Karnataka (KT)	0.260	0.274	0.014	0.542	0.531	-0.011
Kerala (KE)	0.581	0.605	0.023	0.067	0.054	-0.013
Madhya Pradesh (MP)	0.140	0.174	0.034	0.261	0.193	-0.068
Maharashtra (MH)	0.330	0.353	0.023	0.457	0.497	0.040
Orissa (OD)	0.104	0.136	0.032	0.312	0.319	0.007
Punjab (PJ)	0.488	0.532	0.045	0.146	0.220	0.074
Rajasthan (RJ)	0.200	0.212	0.012	0.190	0.227	0.037
Tamil Nadu (TN)	0.209	0.234	0.026	0.235	0.234	-0.001
Uttar Pradesh (UP)	0.304	0.338	0.034	0.177	0.080	-0.097
Uttaranchal (UL)	0.263	0.321	0.058	0.222	0.185	-0.036
West Bengal (WB)	0.390	0.448	0.058	0.257	0.236	-0.020

* Also includes data of Telangana.

Source: Computed using data from the Census of India 1991, 2001, and 2011a.

sub-equation 3 in Table 2 supports this, where religious diversity in fact shows a negative relation with murder rate. We have not used the CD in this equation due to massive multicollinearity, and have used religious diversity instead, serving as an instrumental variable for CD (as it is highly correlated with CD).

The CD causes political fragmentation. Political fragmentation results from competitive and politically diverse groups within a society. In other words, cultural diversity (CD) leads to an increased number of political parties winning at least one Lok Sabha seat in a state. This also points that the diverse interests of the groups are channelled through an increased number of political parties, as not one or two political parties may be able to articulate the interests of culturally diverse communities. On the other hand, human capital interaction with CD brings down the political fragmentation. Comparing sub-equations 1 and 4, one can say that economic growth gets compromised

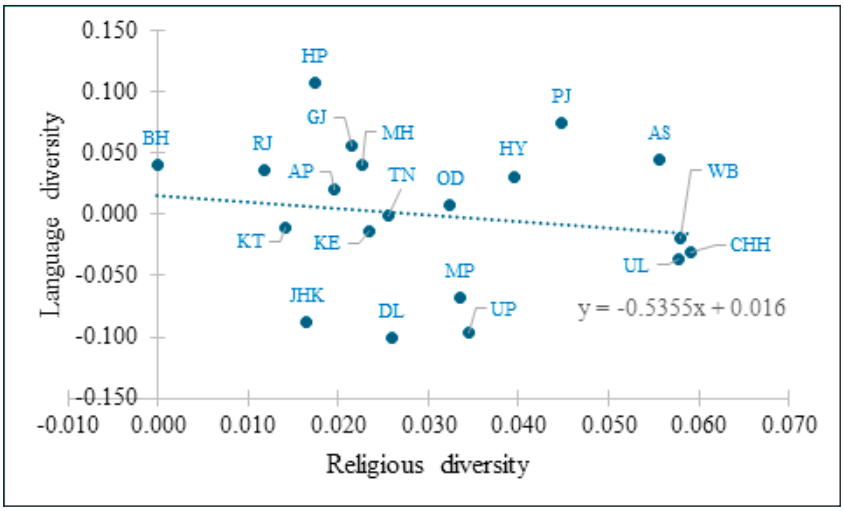

Fig. 3: Reverse relation of change in language and religious diversities in Indian states; 1991-94 and 2019-22

by political fragmentation, and the political fragmentation is caused by cultural diversity. As such, where cultural diversity directly positively impacts the *g*, it negatively affects *g* through the channel of political fragmentation.

The 3SLS estimations presented in Table 4 (Fig. 4) show that both religious and language diversities positively impact the economic growth in the selected states, which in turn validates our results of CD positively impacting the economic growth discussed above. However, the impact of religious diversity on economic growth is far higher than that of language diversity. The $lnPCI_{-1}$, *MR* and *PF* all have their expected direction of impacts (negative and statistically significant) on the growth rate of per capita income (*g*). The estimations show that where the religious diversity is neutral to violence (murder rate), the language diversity positively causes the murder rate. The results also show that coastal states in India have far lower mean murder rates than the interior states.

The religious diversity, though, does not cause violence, but it causes political fragmentation. This is mainly because religiously diverse groups negotiate their interests in democracy through different political parties and promote or vote for those able to protect or articulate their interests. This is a healthy part of the Indian multi-party democratic system.

Conclusions

For a long time, ethnic and cultural diversities have been condemned for causing socio-political instability and increased violence. This is no surprise as most of the culturally and ethnically diverse countries are also underdeveloped. Only in recent years though, this assertion is increasingly coming under scrutiny. The examples of USA, Canada, and urban centres and firms, culturally diverse and growing economically faster fits into the counter. Serious academic scrutiny

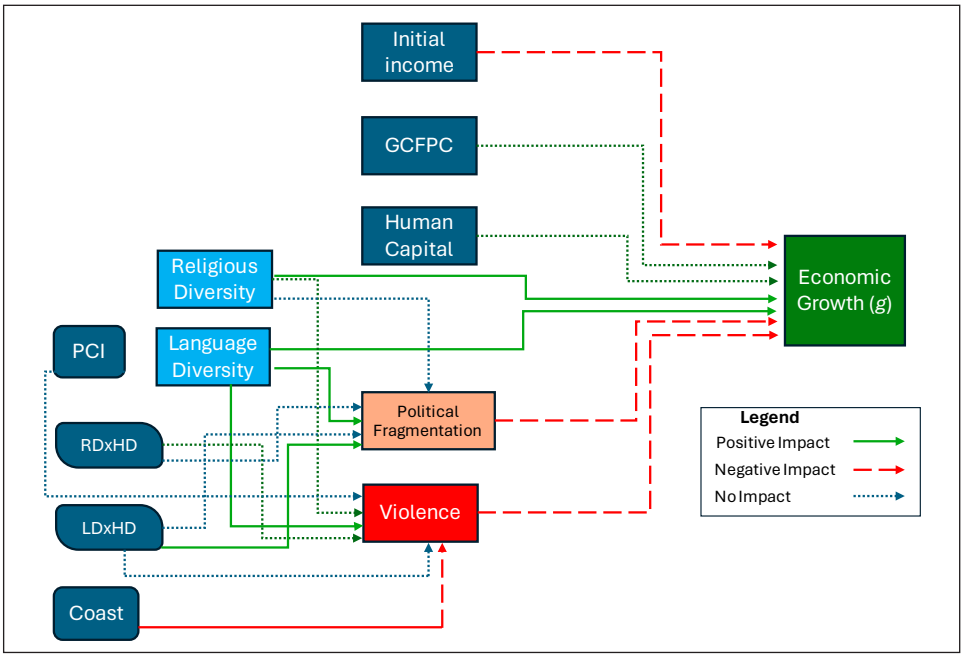

Fig. 4: Relationships between RD, LD, economic growth rate and other variables

Source: Based on data presented in Table 4

reveals that diversity raises innovations, has complementary effects on labour, raises the skill pools, and, as such, increases efficiency in the economic system, which helps uplift overall economic growth and development. Many studies have pointed out that there is an income effect on diversity's impact on economic growth; that is, the richer economies, through effective institutions and human capital, are able to better manage and use cultural diversity for their economic growth.

In the case of India, this study shows that (a) the impact of cultural diversity on economic growth in India is significant; especially religious diversity has a much higher impact on the economic growth rate than language diversity, (b) the overall diversity and religious diversity do not have positive impacts on increase in violence (in fact, religious diversity brings it down), but the language diversity does raise the violence, (c) the cultural diversity and, especially religious diversity, raises political fragmentation, (d) violence (murder rate) and political fragmentation in turn negatively impact economic growth, and (e) the human capital in interaction with cultural diversity reduces political fragmentations. Put differently, the overall cultural and religious diversities lead to economic growth though they also compromise it to some extent indirectly through channels of violence and political fragmentation. Religious diversity has a higher impact on political fragmentation which has an even higher negative drag on economic growth than language diversity through channels of violence. However, the impacts of cultural diversity are far higher on economic growth than the minor negative

Table 4: Impact of religious and language diversities on economic growth

Equations/variables	Coef.	P>z
Eq 1: Average growth rate of per capita income (*g*)		
Religious diversity (*RD*)	21.727	0.000
Language diversity (*LD*)	8.203	0.015
Ln lag PCI ($lnLPCI_{-1}$)	-5.717	0.000
Ln Gross Capital Formation per capita (*lnGCFPC*)	0.226	0.431
Human capital (*HC*)	-0.044	0.278
Murder rate (*MR*)	-3.469	0.000
Political fragmentation (*PF*)	-3.353	0.000
Trend (*t*)	-0.430	0.082
Constant	85.541	0.000
R-square	-3.3925	
Chi-quare	24.920	0.002
RMSE	6.809	
Eq 2: Violence *(MR)*		
Religious diversity (*RD*)	1.217	0.564
Language diversity (*LD*)	3.503	0.027
RDxHC	-0.014	0.595
LDxHC	-0.005	0.823
lnPCI	-0.105	0.537
Trend (*t*)	-0.235	**0.000**
Coast (coastal=1; no-coastal=0)	-1.164	**0.000**
Constant	4.801	**0.007**
R-square	0.596	
Chi-quare	257.230	0.000
RMSE	0.835	
Eq 3: Political fragmentation (*PF*)		
Religious diversity (*RD*)	10.301	**0.011**
Language diversity (*LD*)	2.937	0.373
RDxHC	-0.051	0.309
LDxHC	-0.053	0.228
Trend (*t*)	-0.094	0.198
Constant	2.603	0.000
R-square	0.304	
Chi-quare	67.48	0.000
RMSE	1.680	
For the whole equation		
Hansen-Sargan overidentification statistic	168.533	0.000

impacts through indirect channels on the same. In sum, as a society we are sitting on a huge economic resource comprising cultural diversity, and we can ignore it only at our own peril.

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