Annexures

(Volume I)

CHAPTER 1: STATE OF THE ECONOMY: AN ANALYTICAL OVERVIEW AND OUTLOOK FOR POLICY

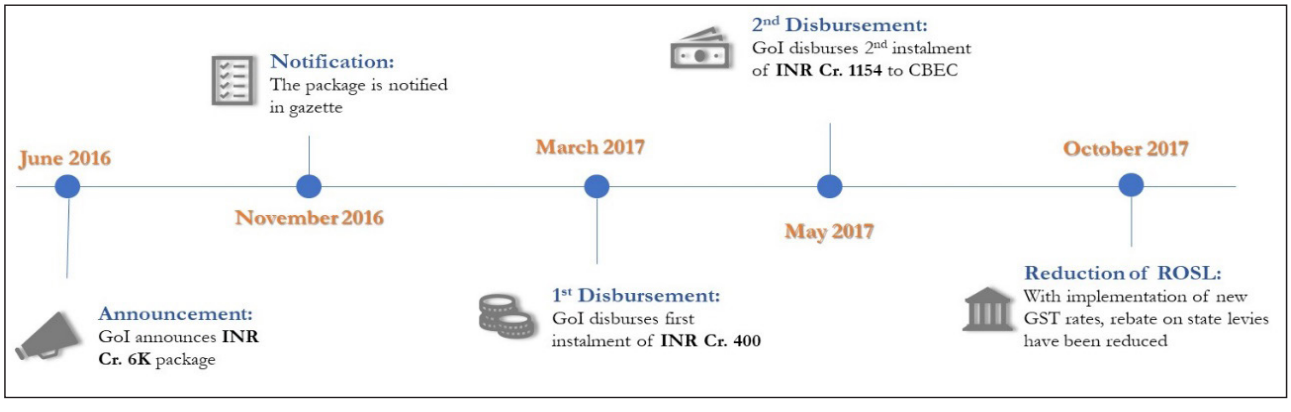
Annex I: Further details on clothing package

In India, the apparel sector produces 24 jobs for every 1 lakh of investment compared to .3 jobs for a similar investment in the auto industry and .1 jobs in the steel industry. The sector has significant potential for social transformation because it employs many women. Women make up more than 75% of employment in the apparel sector in India, the highest share among all manufacturing sectors[1].

As discussed in the previous Economic Survey, there are several challenges facing the Indian apparel exports sector ranging from logistics, labour regulations, tax and tariff policies. In addition, India is disadvantaged relative to some of its competitors who have more favourable access to large markets in the US and EU[2].

The 2016 clothing package included a number of components to address these issues. It was first announced in June of 2016. The scheme was officially notified in November 2016, and the first and second installments of Rs.400 crores and Rs. 1554 crores were released in March and May 2017, respectively. Figure 1, below, outlines the timeline of implementation for the clothing package.

Figure A1. Timeline of clothing package



Components of the package included easing short-term labour contracts, assistance for employer EPF contributions, and other export incentives. The largest of these were rebates on state levies (ROSL) that would offset embedded, indirect taxes on exports. These were above duty-drawbacks and other export incentives. Table A1 below summarizes the changes in incentives[3] before and after the package.

Table A1. Change in total export incentives Pre- and Post- Package

	Pre-package			Post-Package		
	Duty-Drawback	ROSL	Duty Drawback + ROSL	Duty-Drawback	ROSL	Duty Drawback + ROSL
RMG Cotton	7.6%	-	7.6%	7.6%	3.4%	11%
RMG Manmade Fibre	9.8%	-	9.8%	9.8%	2.8%	12.6%
RMG Silk	7.5%	-	7.5%	7.6%	3.9%	11.5%
RMG Wool	8.5%	-	8.5%	8.7%	3.9%	12.6%

1 Clothes and Shoes: Can India Reclaim Low Skill Manufacturing?. *Economic Survey 2016-17*, Oxford University Press, 2017, pp. 128–138.
2 Ibid.
3 Not including other incentives like MEIS

RMG Blended Cotton and Manmade fibre	9.5%	-	9.5%	9.5%	3.0%	12.5%
RMG Wool and Manmade Fibre	8.5%	-	8.5%	8.7%	3.1%	11.8%
RMG Others	7.5%	-	7.5%	7.6%	2.8%	10.4%

Source: CBEC, Ministry of Textiles

Data and definition of treatment and comparison groups

To conduct the above analysis, we used disaggregated monthly exports from April 2010 to September 2017 for 118 different products. These products are part of 17 different manufacturing sectors. There is considerable seasonality and variability of exports across products. Therefore, for all regressions we use the log of seasonally adjusted monthly exports as the outcome variable.

Our analysis defines two alternative treatment groups. The first treatment group consists of ready-made garments (RMGs) made of manmade fibers only. The second consists of the 3 other RMG products included in the clothing package: RMG-Cotton, RMG-Silk, RMG-Others.

For robustness, we compare each treatment group to 3 different comparison groups. The first comparison group is made up of all the other 114 products that were not included in the clothing package. The second is 15 labor-intensive products[4] (leather, machine tools, paper products, etc.), while the third is made up of 26 other consumer durables (e.g., appliances, autos, electronics etc.).

Empirical strategy

We run five different regressions specification based on a difference-in-difference (DD) approach. The general specification is the following:

$$Y_{it} = \alpha_0 + \delta_i + \tau_t + \beta D_{it} + \boldsymbol{\theta X}_{it} + \varepsilon_{it} \quad (1)$$

Where:

Y_{it} is the dependent variable for product *i* during time *t* (i.e., log of seasonally adjusted exports of various products)

δ_i are dummy variables for each product (i.e., product fixed effects)

τ_t are dummy variables for each time period (i.e., month-year fixed effects)

D_{it} is the treatment status which equals 1 if product *i* is in the treatment group (RMGs) and time period *t* is in the treatment period (typically post-June 2016), and 0 otherwise

$\boldsymbol{X}_{it}$ is a vector of other controls for product *i* during time period *t* (variables that are state and time variant- such as controls for demonetization and GST)

ε_{it} is the error term[5]

β is our key parameter of interest which measures the effect of the treatment

Besides equation (1), we run 4 other specifications to check for robustness. Thus, for the purposes of our analysis we run the following 5 specifications for each of the treatment-comparison pairs (N.B. equation (1) is shown in specification 4 below) :

4 Das et al. *Employment Potential of Labour Intensive Industries in India's Organized Manufacturing*. ICRIER. 2009.

5 We cluster all errors to account for auto-correlation following Bertrand and Duflo (2003)

1. No fixed effects or controls

2. Product fixed effects and time fixed effects

3. Sector x time fixed effects

4. Product fixed effects, time fixed effects, and informality interacted with demonetization and GST (DD specification)

5. Sector x time fixed effects, and informality interacted with demonetization and GST

In addition, we also adjust the start-date and end-date for the regression, to make sure that our results are robust to changes in the treatment and study window. In all, we run close to 2000 regressions. These combinations are summarized in the Table A 2. Of these specifications, we find that specification 4 when starting November 2015 captures the effect best. This specification is stable across combinations of treatment and comparison groups, has the highest goodness of fit, and begins during a period when pre-trends are more similar across product graphs.

Table A2. Summary of Regression Combinations

	(A) Treatment Group	(C) Comparison Groups	(D) Start periods	(E) Specifications	(F) End periods	Total regressions
Number of combinations	2	3	4	5	*16*	*1,920*
Description	• RMG: Manmade Fibers • RMG : Natural Fibers (except wool)	• All non- RMG manufacturing exports • Manufacturing exports from labor-intensive industries • Manufacturing exports of consumer good	• April 2010 • January 2013 • November 2015 • May 2016	• No controls • Product and time FE • Sector-time FE • Product and time FE plus demonetization and GST by product informality • Sector - time FE plus demonetization by product informality	• 2016m6 • 2016m7 • 2016m8 • 2016m9 • 2016m10 • 2016m11 • 2016m12 • 2017m1 • 2017m2 • 2017m3 • 2017m4 • 2017m5 • 2017m6 • 2017m7 • 2017m8 • 2017m9	

Summary of Results

The tables on the next page summarize the main regression results for Ready-Made Garments (RMG) other and Ready-Made Garments (RMG) made of manmade fibers when compared to all three comparison groups for the period between November 2015 and September 2017.

The results show that that there was no effect of the package on RMGs of cotton, silk, and others (Table A3). On the other hand, there is a significant effect of the package on exports of RMG made of manmade fibers (Table A4). Specification (1) which has no additional controls or fixed effects, has a treatment effect of .122. However, when we include product and time fixed effects, the effect rises slightly to between .127-.138. When we include controls for demonetization and GST, the effect rises further to between .161-.171.

To see how the effect, changes over time, we run the regressions with different end dates. Figure A2 shows that the effect of the package on RMG of manmade fibers, grew gradually and steadily. This means that clothing package increased monthly exports of RMG of manmade fibers by 16-17% by September 2017.

Figure A2. Estimated Cumulative Impact on MMF-RMGs over time

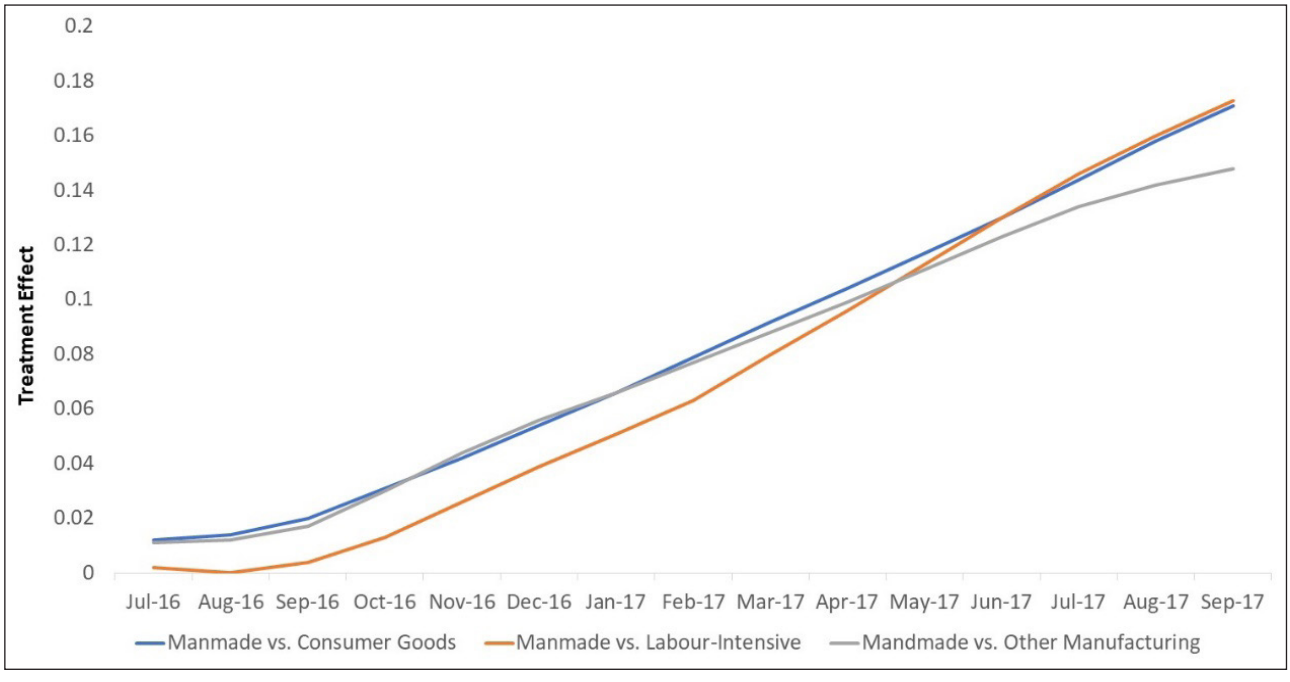


Table A3. Effect of Clothing Package on Exports of Ready-Made-Garments: Natural Fibers[6] (Nov. 2015 – Sept. 2017)

	Vs. Other Manufacturing					Vs. Consumer Goods					Vs. Labour-Intensive Goods				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Clothing Package	-0.171	-0.156	-0.175	-0.128	-0.146	-0.171	-0.167	-0.397	-0.099	0.042	-0.171	-0.162	-0.081	-0.127	-0.077
	(0.145)	(0.148)	(0.172)	(0.149)	(0.172)	(0.149)	(0.162)	(0.466)	(0.152)	(0.202)	(0.147)	(0.151)	(0.190)	(0.152)	(0.190)
Product FE		YES		YES			YES		YES			YES		YES	
Time FE		YES		YES			YES		YES			YES		YES	
Sector-Time FE			YES		YES			YES		YES			YES		YES
GST & Demon controls				YES	YES				YES	YES				YES	YES
Adj. R-Squared	0.00	0.00	0.01	0.04	-0.01	0.03	0.00	-0.37	0.33	0.07	0.10	0.09	0.09	0.24	0.08
N	2,691	2,691	2,691	2,415	2,415	414	414	414	391	391	667	667	667	644	644

Table A4. Effect of Clothing Package on Exports of Ready-Made-Garments: Manmade Fibers (Nov. 2015 – Sept. 2017)

	Vs. Other Manufacturing					Vs. Consumer Goods					Vs. Labour-Intensive Goods				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Clothing Package	0.122	0.138	0.118	0.162	0.147	0.122	0.127	-0.104	0.171	0.335	0.122	0.131	0.212	0.161	0.216
	(0.000)**	(0.026)**	(0.072)	(0.036)**	(0.070)*	(0.000)**	(0.055)*	(0.445)	(0.068)*	(0.000)**	(0.000)**	(0.022)**	(0.063)**	(0.034)**	(0.063)**
Product FE		YES		YES			YES		YES			YES		YES	
Time FE		YES		YES			YES		YES			YES		YES	
Sector-Time FE			YES		YES			YES		YES			YES		YES
GST & Demon controls				YES	YES				YES	YES				YES	YES
Adj. R-Squared	0.00	-0.00	0.01	0.04	-0.02	0.00	-0.02	-0.24	0.37	0.24	0.02	0.03	0.09	0.21	0.08
N	2,645	2,645	2,645	2,369	2,369	368	368	368	345	345	621	621	621	598	598

* $p<0.05$; ** $p<0.01$; Standard Errors in parentheses

6 Except RMG Wool which was not part of the clothing package.

CHAPTER 2: A NEW, EXCITING BIRD'S-EYE VIEW OF THE INDIAN ECONOMY THROUGH THE GST

ANNEX 1. WHO OPTS FOR THE "COMPOSITION" SCHEME ?

To make the new GST regime friendly to small taxpayers, the "compliance-lite" composition scheme was introduced. Under the composition scheme, enterprises has to file quarterly tax returns instead of monthly tax returns applicable to regular filer, to pay a small tax (1%, 2% or 5%) on their total turnover. But they are not eligible for input tax credits.

Before the GST was introduced, it was expected that small dealers who sell directly to consumers (B2C) would chose the composition scheme. As expected, around 1.6 million taxpayers registered under this scheme. More surprising and puzzling was that many of the small traders, eligible for this scheme, nevertheless opted to become regular taxpayers under the GST. The detailed analysis suggests that one of the reasons is that small traders tend to buy a lot from large traders which allows them to avail themselves of input tax credits.

Second, opting into the composition scheme also depends on the relationship between the GST rate and value-added at the final stage.

The example in Table 1 highlights this. Panel A lists a few combinations of turnover and GST rates. Panel B calculates the tax liabilities for different combinations of the regular rate and the extent of value added, based on equation-1. A positive number indicates that it is more advantageous to opt for regular filing over the composition scheme. The intuition is simple: the greater the ratio of value added to turnover, and the higher the tax rate, the lower the tax liability under the composition scheme. Since most of the non-durable consumer goods tend to attract lower taxes and lower value addition at final stage, dealers selling them are likely to opt for regular filing.

$$[(Purchases + Value\ added\ at\ final\ stage) * Composition\ rate] - [Value\ added\ at\ final\ stage * Regular\ GST\ rate] \ldots\ldots\ldots\ldots (1)$$

Table 1. Basic relationship between tax rates and value addition at final stage

Panel A					
		Case-1	Case-2	Case-3	Case-4
Purchases (excluding tax) (Rs)		10000	10000	10000	10000
GST Rate		6%	12%	18%	28%
GST (Rs)		600	1200	1800	2800
Composition Rate		1%	1%	1%	1%
Panel B					
		Regular Tax Rate			
		6%	12%	18%	28%
Percent of Value Addition (on purchases)	0%	100	100	100	100
	1%	95	89	83	73
	5%	75	45	15	-35
	10%	50	-10	-70	-170
	20%	0	-120	-240	-440

ANNEX II. EXPLAINING THE INFORMALITY ESTIMATES

This Annex explains the methodology used in arriving at the estimates of informality in Section 7 of the chapter.

The NSSO conducted a survey of Unincorporated Non-Agricultural Enterprises (Excluding Construction) in India between July 2015 and June 2016 (the 73rd Round).The questionnaire for this specifically asked whether firms were registered with VAT, Provident Fund, and ESIC. All the firms which said they were registered under either of these are dropped. The remaining firms were then treated as informal. Of these non-VAT, non-EPFO and non-ESIC firms, firms whose turnover was greater than GST threshold are further excluded, considering it unlikely that they would not be part of the GST net; also self-help groups are excluded. This yielded a figure of 574 lakh firms. This figure is then updated for the two years that have elapsed since the 73rd round was conducted, assuming an annual increase in firms of 3 percent. This gives a total figure for informal firms in 2017-18 of about 609 lakh firms. (the base for these calculations was the 73rd Round rather than the Economic census for two reasons: the former has turnover data; second it also asks questions that allows for identifying those enterprises that might be part of the tax and social security nets).

Since the 73rd Round excluded unincorporated construction, the number of informal enterprises in this sector is estimated using data from the Sixth Economic Census (2012-13), updating it to 2017-18 by adding an annual rate of enterprise growth of 1 percent. This yielded 10 lakh such firms.

The number of employees that are not part of the GST or the EPFO are estimated from the 73rd Round itself. Matching GST and EPFO/ESIC data allowed the identification of firms that were common to all, and those that fell into one category but not the other. Since GST data do not provide payroll numbers for firms, payroll for firms that are in the GST but not the EPFO or ESIC had to be estimated in one cell in Table 7. This was done by assuming that the ratio of payroll to turnover for these firms would be the same as that for enterprises that were both in the GST and EPFO. The implicit assumption is that since these were formal firms (employing more than 20 employees), they should have the characteristics of other formal firms for which information was available in the GST data.

Our estimate for the total non-agricultural work force is from the 63rd Round of Employment and Unemployment Survey of 2011-12. The survey collects information by National Industrial Classification (NIC). Based on this, the non-agriculture workforce of about 24 crore to 25 crore is estimated in 2017-18.

Of course, there are some caveats to the analysis. We could be missing formal firms that are not complying with the GST and/or ESIC/EPFO, although this category is likely to be small. There could have been developments since the 73rd Round was undertaken which this analysis may miss. Further research will help shed greater light on many of these important questions.

Annex II. List of States' Code

Code	State Name
AP	Andhra Pradesh
ARP	Arunachal Pradesh
AS	Assam
BH	Bihar
CG	Chhattisgarh
DEL	Delhi
GO	Goa
GJ	Gujarat
HR	Haryana
HP	Himachal Pradesh
J&K	Jammu and Kashmir
JH	Jharkhand
KA	Karnataka
KE	Kerala
MP	Madhya Pradesh
MH	Maharashtra
MN	Manipur
MG	Meghalaya
MZ	Mizoram
NG	Nagaland
OD	Odisha
PUN	Punjab
RJ	Rajasthan
SK	Sikkim
TN	Tamil Nadu
TE	Telangana
TR	Tripura
UP	Uttar Pradesh
UK	Uttarakhand
WE	West Bengal

CHAPTER 3: INVESTMENT AND SAVING SLOWDOWNS AND RECOVERIES: CROSS-COUNTRY INSIGHTS FOR INDIA

Annex I. Sample, time period, data source

Sample: Algeria, Argentina, Bangladesh, Bolivia, Brazil, Cameroon, Chile, China, Columbia, Costa Rica, Cyprus, Cote-de-Ivore, Dominican Republic, Ecuador, Egypt, El Salvador, Ghana, Guatemala, Honduras, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kenya, Republic of Korea, Madagascar, Mali, Malaysia, Malawi, Mauritius, Mexico, Morocco, Mozambique, Nicaragua, Nigeria, Pakistan, Panama, Paraguay, Peru, Phillippines, Senegal, Sierra Leone, Singapore, South Africa, Sri Lanka, Tanzania, Thailand, Tunisia, Trinidad and Tobago, Turkey, Uruguay, Venezuela, Zimbabwe.

Time period: 1970-2016. Operationalization of the definition of slowdowns restrict the effective time period between 1975 and 2014.

Variables: Gross domestic saving and gross fixed capital formation (as percent of GDP), and real per-capital GDP (constant 2010 US$)

Data source: World Bank's World Development Indicators.

Annex II. Country-Years of Slowdown Episodes (including oil exporters)

The number of country-years (out of 2200 country years) of slowdown the 3 and 4 percent thresholds are shown in the table A1 below:

Table A1. Country years of Slowdown

3% threshold

	Saving	Investment	Common
1975-83	34	48	33
1984-97	75	89	39
1998-2007	24	63	19
2008-2014	59	38	8
Total	**192**	**238**	**99**

4% threshold

	Saving	Investment	Common
1975-83	23	42	27
1984-97	57	73	23
1998-2007	18	47	11
2008-2014	43	29	2
Total	**141**	**191**	**63**

Country years: Data used in the analysis pertain to about 2200 observations (40 years for 55 economies) or 2200 country years. Many more country years of investment, rather than saving, slowdowns are detected over 1975-2014. Given that a higher threshold implies a stricter condition to be satisfied for any given year to be considered as a slowdown year, the higher the threshold the fewer are the number of slowdowns captured.

The number of **episodes** of slowdowns is given in the table A2 below:

Table A2. Summary of Slowdown Episodes

	Investment	Saving	Common
2% threshold	69	35	40
3% threshold	58	36	27
4% threshold	49	28	19

Annex III

Table A3. First year of Investment and Saving Slowdown Episodes (excluding oil exporters)

	2% threshold		3% threshold		4% threshold	
	Investment slowdown	Saving slowdown	Investment slowdown	Saving slowdown	Investment slowdown	Saving slowdown
Argentina	1979 1988 1999	1979 1989 2007	1979 1988 2000	1979 1990 2008	1979 2000	1979 1990 2011
Bangladesh						
Bolivia	1980 2000	1984 2013	1980 2001	1984 2013	1981 2001	1985
Brazil	1982 1990	1990 2013	1982	1990 1993	1983	1994
Cameroon	1980 1988	1986 2007	1980 1989	1986 2007	1980 1990	1987 1991 2008
Chile	1998	1996 2008	1998	1997 2010	1999	2011
China	1988	1997	1988	1998		
Colombia	1997	1980 1991	1998	1991	1998	1995
Costa Rica	1981	1983	1982	1983	1982	1983
Cote d'Ivoire	1981	1978 1986	1981	1978 1986	1981	1979 1986
Cyprus	1982 1998 2009	1990 2006	1982 2010	1990 2006	1983 2010	2007
Dominican Republic	1982 1990 2002	1983	1990 2002	1984	1990	1984
Egypt, Arab Rep.	1984 1990 2002 2010	1995 2009	1990 2011		1990 2011	
El Salvador	1979 2008	1979	1979	1979	1979	1979
Ghana	2006		2006			
Guatemala	1980 2008	1979	1981 2008	1979	1981	
Honduras	1981 2000 2009	1980 1997	1981 2009	1981 1998	1981 2009	1981 1998
India	2012	2010	2013	2011		
Indonesia	1997	1993	1997	1993	1998	1993
Israel	1975 1983 1998		1975 1984 2000		1975	
Jamaica	1975 2007	1975 1980 1993	1975 2007	1975 1994	1975 2008	1975
Jordan	1982 1996 2009		1982 1996		1982 1997	
Kenya	1979 1991 1996	1978 1994		1978 1994		1995
Korea, Rep.	1996	1999	1997	2000	1997	
Madagascar	2009		2009		2009	
Malawi	1979 1995 2010	1978	1980 1995 2010	1979	1980 1995 2010	1979
Malaysia	1984 1997	1980 2001 2008	1984 1997	1980 2008	1985 1997	2009
Mali	1998 2010		1998 2011		1998	
Mauritius	1981 1995 2000 2012	2003	1981 1995 2012	2003	1981 2013	2004
Mexico	1982	1985	1982	1988	1983	1991
Morocco	1984 1994 2013	1992 2009	1984	1993 2011	1985	
Mozambique	1991 2003		1991 2003		2004	
Nicaragua	1977	1978	1977	1978	1977	1978
Pakistan	1997 2009	2005	2010	2005		
Panama	1976 1982 2000	1975 1983 2000	1977 1983 2000	1975 1983 2000	1983 1986 2000	1975 1983 2000
Paraguay	1997	2006	1998	2006	1998	2006
Peru	1983 1999	1983 2012	1983 1989 1999	1984 2013	1983 2000	1984
Philippines	1983	1980 1991	1983	1981	1984	1982
Senegal	1985					
Sierra Leone	2012	1990	2013		2013	
Singapore	1985 1999	1985 1999	1985 1999	1985 1999	1985 2000	1999
South Africa	1983 1990	1981 1988	1984 1991	1981 1989	1984	1981 1990
Sri Lanka	1984 2001		1984 2001		1984 2001	
Tanzania	1995		1995		1995	
Thailand	1996	1998	1996	1998	1996	1999
Tunisia	1984 1995 2003 2013	2010	1985	2010	1985	2010
Turkey	1998		1998			
Uruguay	1981	1992	1982		1982	
Zimbabwe	1976 1996	1989 1999	1976 1996	2000	1977 1997	2000

Annex IV. Regression Results

Table A4. Regression results: Investment, saving slowdowns and real per-capita growth

	3% threshold	3% threshold without common episodes	4% threshold	4% threshold without common episodes
Investment	**0.5131*** ** (0.1863)	**0.2705** (0.1750)	**0.7649*** ** (0.2027)	**0.5705*** ** (0.1917)
Saving	**-0.1057** (0.2185)	**-0.1076** (0.2387)	**0.2210** (0.2596)	**0.1936** (0.2838)

Note: ***p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses.**

Annex V. Recoveries from Slowdowns

Table A5 presents the differences in investment/ saving and real per-capita GDP growth rates prevailing 5 to 7 years after the end year of a slowdown.

Table A5. Behaviour of investment and saving in the short run after slowdowns (percentage points, average over thresholds)

3 percent threshold

Cum. Magnitude of Investment Slowdown	Avg. trigger rate (% of GDP)	Avg. rate difference after 5-7 years
50 to < 70	36	-15.1
30 to < 50	26	-6.0
10 to < 30	22	-2.5
Up to 10	20	-0.6
Average	**26**	**-6.0**

4 percent threshold

Cum. Magnitude of Saving Slowdown	Avg. trigger rate (% of GDP)	Avg. rate difference after 5-7 years
50 to <70	--	--
30 to < 50	26	-8.1
10 to < 30	23	-5.7
Up to 10	22	-2.0
Average	**24**	**-5.3**

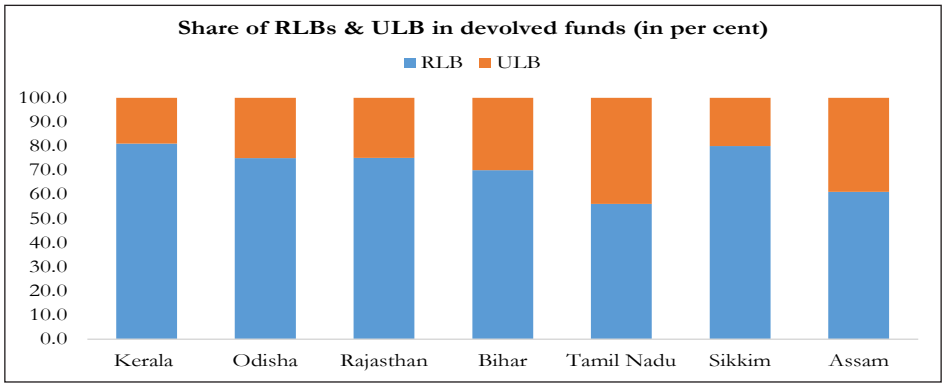
The table A6 below shows the behaviour of investment after attaining a peak rate of 35.5 percent in other economies.

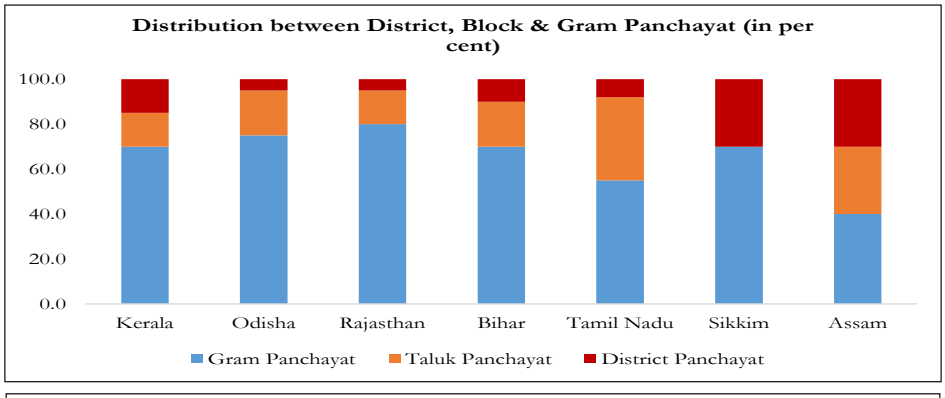
Table A6. Recoveries from a peak of 35.5 percent in other economies (percentage points)

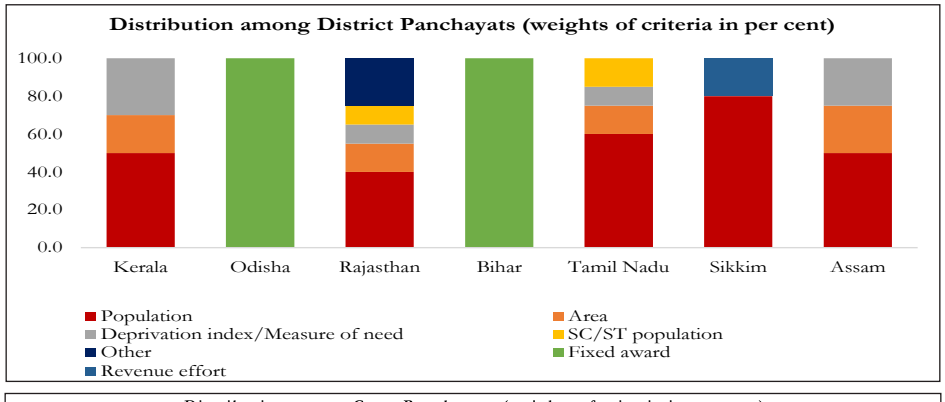
Criterion	No. of similar episodes	Change in Investment rate after 9 years	Change in growth after 9 years
Peak rate of 35.5%	18	-8.7	-3.3

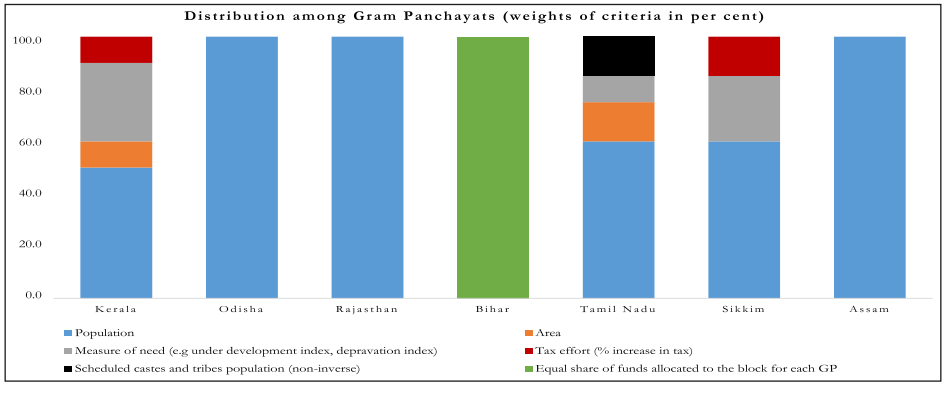
CHAPTER 4: RECONCILING FISCAL FEDERALISM AND ACCOUNTABILITY: IS THERE A LOW EQUILIBRIUM TRAP?

Annex I. Formulae recommended by SFCs for vertical and horizontal distribution of funds among LSGs in different States









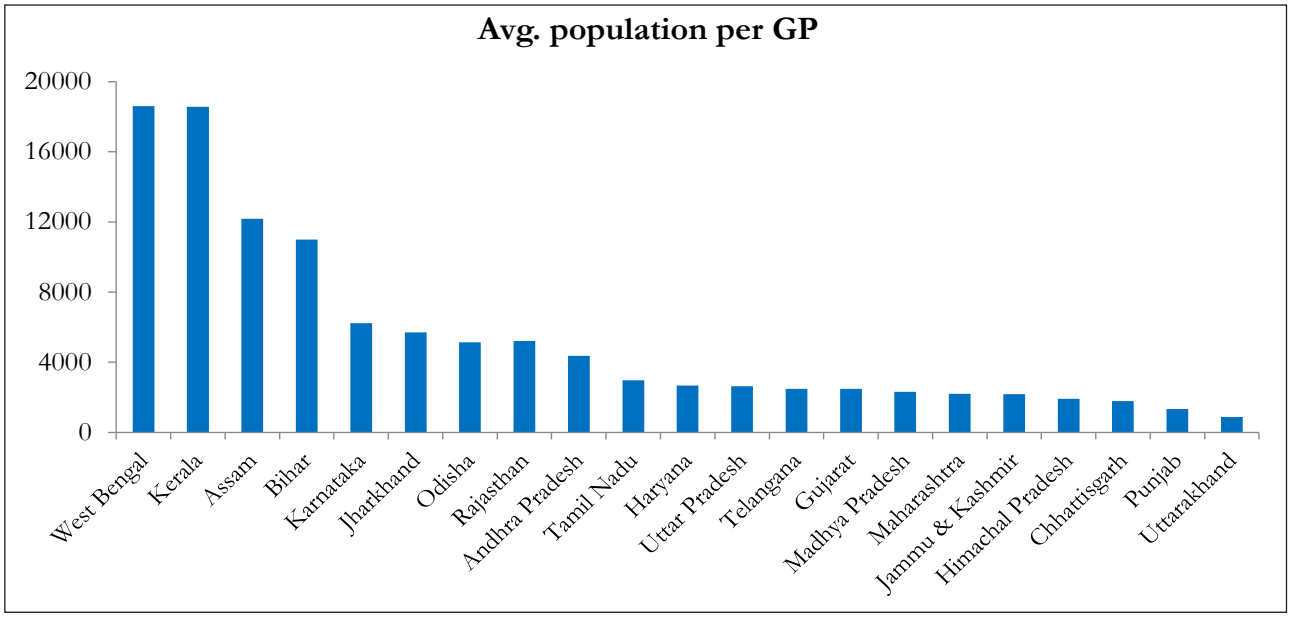
Source: SFC Reports and Action-Taken Reports on SFC Reports.

Annex II. What do we know of RLGs

A. Some Basic facts about RLGs (Panchayats)

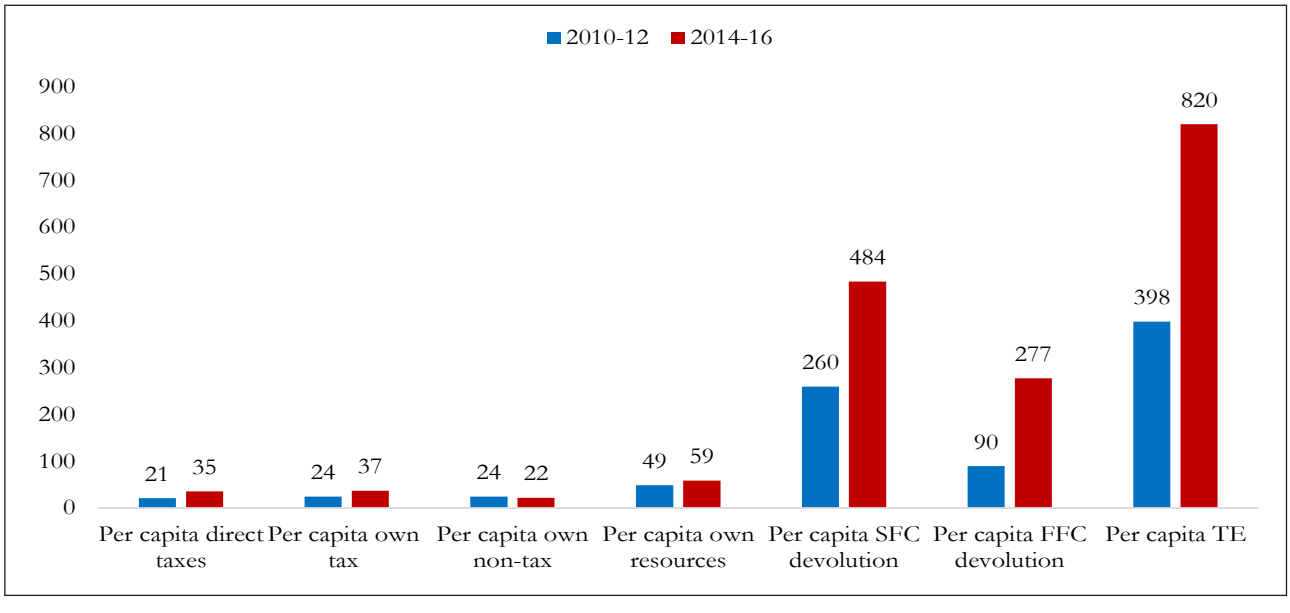
1. An average panchayat in India serves about 3400 people. Even though bigger states naturally account for the largest share of panchayats in the country, in relatively smaller states like Kerala and West Bengal panchayats serve much larger number of people (about 19000) (figure below).

Figure A1. Beneficiary base of RLGs (GP) in India



Source: Ministry of Panchayati Raj and Survey calculations.

Figure A2. Per-capita resources and expenditure (Rs.) of rural local bodies (RLGs)



Source: For RLGs, Survey calculations based on data from Andhra Pradesh, Karnataka, Kerala and Uttar Pradesh.

Note: Total receipts are assumed to be equal to total expenditure.

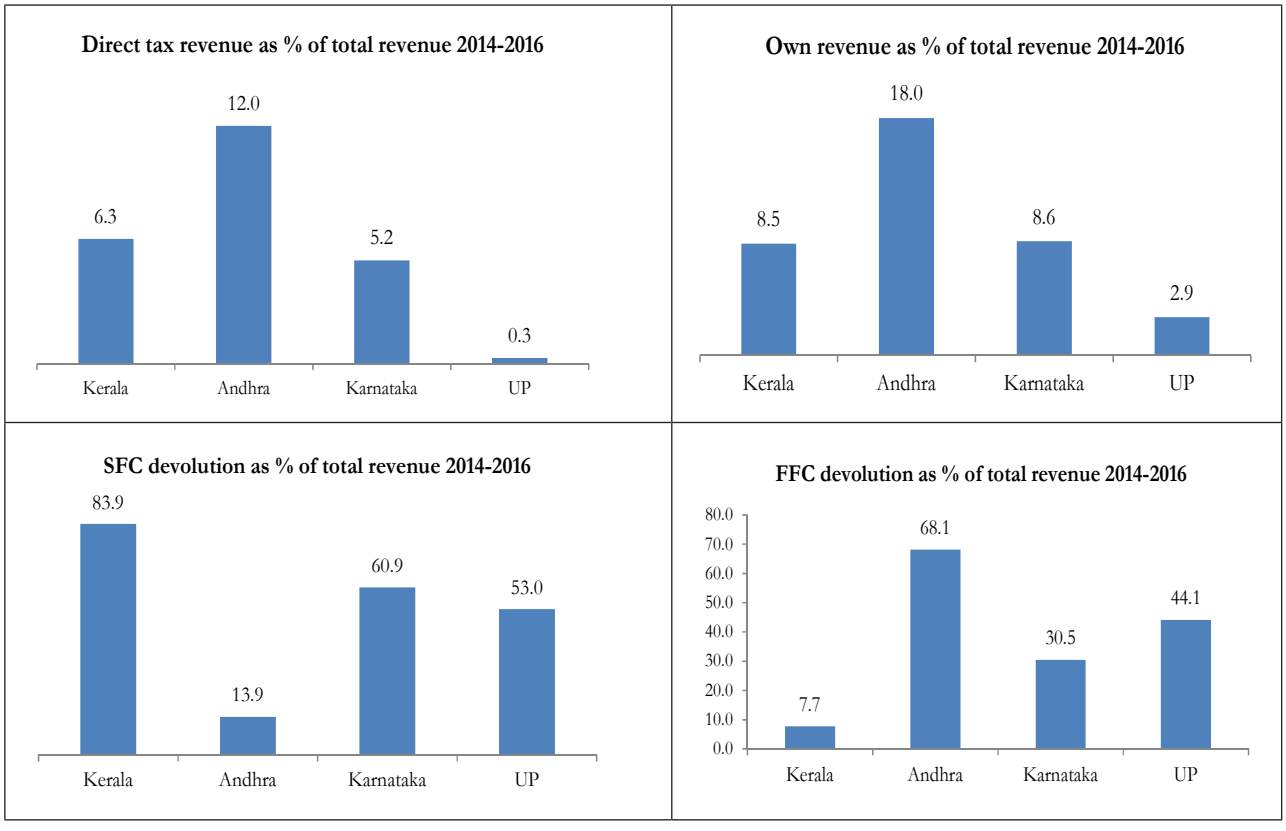
2. Details of revenue generation capacity of RLGs

While figure A2 presents the general picture, there is variation across states on the extent of own revenue generation (figure A3). There are primarily two take-aways:

i. There are two categories of states viz. Kerala, AP and Karnataka who collect some direct taxes and own tax revenue in contrast to states , viz. UP that depend almost entirely on transfers; and

ii. Examination of data for 2010-11 to 2016-17 further revealed that the share of direct taxes and own tax revenue collected by Kerala, Andhra Pradesh and Karnataka has dipped during 2014-16. Not surprisingly, the dependence on devolved funds has therefore increased even for these states over this period.

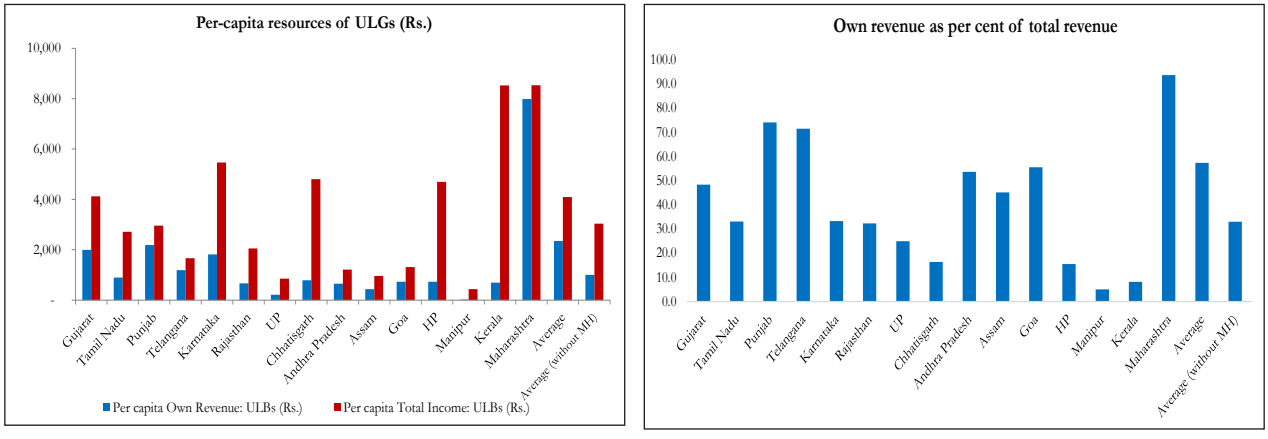
Figure A3. RLGs: direct taxes, own revenue and devolution in selected states (%)



Source: Survey calculations based on information furnished by State Governments.

ULGs: Figure A4 has been constructed with Statewise aggregate data on ULGs as opposed to the city-wise data used in the different sections of the Chapter. The share of own tax revenue collected by ULGs in major states stands at about 50 percent. States viz. Maharashtra, Punjab and Telangana seem to be doing much better on ULG finances than states viz. Kerala and Tamil Nadu.

Figure A4. Fiscal situation of ULGs



Source: Survey calculations based on figures furnished by "Annual Survey of Indian City-Systems, Janaagraha".

B: What do we know about Panchayat finances?

Understanding the overall fiscal performance of RLGs faces two major constraints. First, there is a problem of data adequacy. Even more fundamental problem is the lack of clarity on functional assignment to RLGs. The 73rd Constitutional Amendment and State Panchayat Raj Acts broadly define the functional role of RLGs. However, *de facto*, these roles have not been effectively devolved, and this coupled with sub-optimal tax efforts of RLGs, means that State and Union governments have significant discretion over RLG expenditure. The resultant overlap of functional roles between the Union, State and local governments and multiple channels of expenditure makes it near impossible to accurately determine the fiscal health of RLGs.

Data Adequacy: Incomplete, Insufficient, and Inaccurate data

No Regular, Updated National database: There is no comprehensive, national database on RLG finances. The main source of data used by CFC and SFCs is specifically collected and provided by State governments. Successive Finance Commissions have noted that this data is incomplete, inconsistent, and on occasion unusable. For instance, the 13th CFC collected data on own revenues of RLGss for 2002-03 to 2007-08 but could not use this in their analysis. The 14th CFC requested data from a random sample of 11923 GPs. States only provided data for 9085 GPs and only 6020 GPs contained full details.These data gaps exist despite the fact that the Comptroller Auditor General of India (CAG) has prescribed formats to states for collecting RLG level financial data. Many states do not adhere to them.

There is no alignment between the time span of CFC and SFC recommendations. Consequently, data for the same time period is collected multiple times (and often do not match). Not only is this inefficient, it also means that there is no continuous time series of RLG level financial data.

No Dedicated Provision for Fund Transfers to Panchayats in State Budgets: Data on fund transfers to RLGs ought to be obtained from state budget documents. In most state budgets, transfers to RLGs are depicted as lump sums. But this mostly includes all transfers to RLGs without a transparent accounting system, making it difficult to ascertain the extent of fund devolution. Details of expenditure by object heads are unavailable. Even state level Panchayati Raj departments do not collate function-

wise expenditure data of RLGs, making it difficult to determine expenditure. Only some states such as Karnataka, Kerala, Maharashtra and Gujarat maintain distinct budgetary provisions for disaggregated amounts transferred to each level of RLGs.

In the absence of distinct budget provisions, the only mechanism for collecting data on specific expenditures at the Panchayat level is through line departments. However, location based, GP specific expenditure data is not maintained. Moreover, no distinction is made between funds spent through GP accounts (from their untied funds) and those spent by state department expenditure entities making it difficult to ascertain how Panchayats have spent their untied funds.

Quality of Record-keeping in LSGs: Data recorded at the GP level often does not match state level online data-bases. For example, an Accountability Initiative, Centre for Policy Research study in Karnataka found that the accounts on the Rural Development and Panchayat Raj Department's online system, Panchatantra, did not match GP data. Staff constraints exacerbate the problem. The study found that many GPs could not locate registers of past years as the officers had been transferred.

Confounding factors - Incomplete Devolution

No Clear Activity Map: To ensure effective devolution, State governments need to unbundle functions into activities and devolve them to the appropriate level of government. Except a few states like Karnataka and Kerala, such activity mapping has not been done seriously. Consequently, many States report devolution in terms of "subjects" or "departments" and attribute relevant budgets as "devolved" to LSGs. In practice, however, there are many activities and associated budget heads that remain with the state department. The resultant concurrency of function and multiplicity of expenditure streams makes it difficult to estimate LSG expenditure.

Concurrency creates a second problem. SFCs have no objective system to determine the scope of functions devolved to RLGs and align expenditure responsibilities with resource needs. Consequently, SFCs adopt widely varying and *ad hoc* definitions of resource gaps making assessment of effectiveness of devolution to LSGs difficult. Moreover, cross-state comparisons are impossible.

The following will help improve and mainstream the base and flow of information on local bodies:

- *Create a Window for Local Governments in the State Budget:* State governments should introduce a supplement to their budget documents including detailed classification of transfers for all levels of LSG, from major head to object head. This was recommended by the 13th FC.
- *Capture Location Details for All Expenditures:* A unique code for each habitation should be created to capture location details of GP level expenditures. This will enable automatic consolidation of expenditure data across entities within a specific habitation in real-time.
- *Synchronize SFCs with CFCs:* The past 4 CFCs recommended that SFCs should be appointed on time, and the period covered by FCs should be synchronous with that of CFCs.
- *Standardized Accounting Formats and Norms:* Accounting formats and norms for capturing and maintaining disaggregated data, as prescribed by the CAG, should be maintained. Increased regularity of audits will help instill this accounting discipline.

- *Establish a Permanent SFC Cell at the State level as a Nodal Office for LG data:* A permanent SFC cell in each state will go a long way towards ensuring regular and reliable data collection.

C. Human resources in Gram Panchayats

Gram Panchayats (GPs) perform functions related to public sanitation, drinking, connectivity, street lighting, creation and maintenance of other public assets and facilities and monitoring and supervision of programmes. With increased allocations under the Fourteenth Finance Commission, these are significant responsibilities with sizeable requirement of human resources. The table below shows that the representative base of GPs is strong with one elected representative for less than 500 people, pointing towards the strength of political decentralization. However, this is not translated into sufficient decentralization of functions, functionaries and implementation capabilities. In Uttar Pradesh Panchayats are small in terms of population coverage. Still, the ratio of Panchayat Secretaries to the number of Panchayats is very low, though their service is are reportedly supplemended by those of village develompent officers. Except for two to three States, most others are underequipped in terms of functionaries.

	Human resources per Grama Panchayat			Population per Grama Panchayat
	Members	Panchayat Secretary	Other staff except Grade IV	
Kerala	17.0	1.00	13.5	18567
Uttar Pradesh	12.6	0.11	0.6	2629
Rajasthan	10.9	0.63	0.8	5205
Andhra Pradesh	11.0	0.48	0.2	4362
Karnataka	16.1	1.56	1.5	6220
Bihar	13.7	0.44	NA	11005
Average of above	12.6	0.3	0.8	4556

Source: Furnished by the respective State Governments and Survey calculations.

NA=Not available

The Committee on Performance-based Payments for Better Outcomes in Rural Development Programmes under the Ministry of Rural Development, in its recent report, has highlighted the deficiencies in core staffing in Panchayats. Vacancy positions in core posts are high and modes of recruitment are varied with increasing reliance on contractual staff. Absence of defined human resource policy in RLGs in most States results in ad-hoc accretions. The Report also indicates that the work load in the areas of engineering, accounting and data entry has increased without commensurate human resource reinforcement.

Annex III. Land tax potential

The assessment of collection of land taxes by State Governments vis-à-vis its potential is done by combining information from four data sources:

a. The report on the 'income, expenditure, productive assets and indebtedness of agricultural households in India' of the National Sample Survey Office, based on its70th Round conducted during January-December 2013 and the corresponding unit level data; and its Report on "Key indicators of Situation of agricultural households in India."

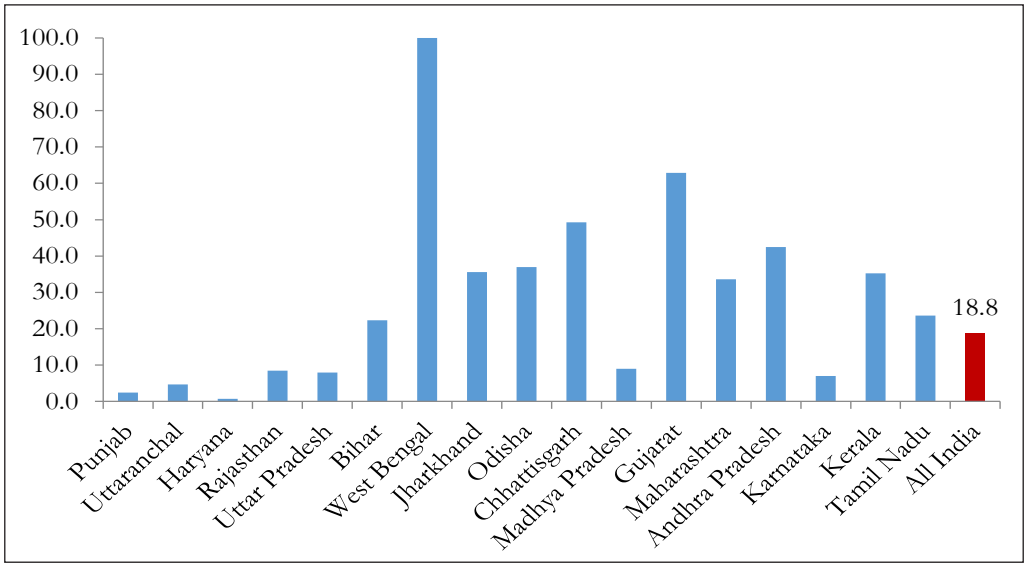
b. The fair values of different types of land fixed by the Government of Kerala for over 700 villages spread over seven districts of Kerala, sourced online;

c. Over 180 sale price quotations for different varieties of agricultural land in Kerala sourced online from real estate websites and about 100 such quotations each in Tamil Nadu and Karnataka from different sources;

d. Land revenue collections of state governments sourced from the RBI's publication, "State Finances: A Study of Budgets".

Assessment of base land values: The NSSO 70th Round provides information on net incomes from cultivation and holding of livestock. The underlying information on agricultural area is first valiadated using information Agricultural Census 2010-11. The income for 2012 (July-December) is stepped up to that in 2015-16 by using the growth in gross value added in agricultural and livestock operations during the intervening years. Farm income per hectare of land, so arrived at State-wise, is then capitalized employing the income capitalization model that postulates that the value of land is based solely on future income flows and therefore equates the present value of land to the discounted flow of future incomes from land.

Figure A5. Land revenue collection in 2015-16 as percentage of potential (as per national land values)



Source: Survey Calculations.

Validation: The Department of Registration of the Government of Kerala disseminates the information on fair values of land fixed by the Government in the website http://igr.kerala.gov.in. These fair values, fixed in 2010 in a decentralized manner and modified subsequently in some cases, represent some 'base value' of different land categories. The examination of about 2000 observations of fair values of three relevant categories—garden land, residential plots and wet land—spread across seven districts of Kerala (Kollam, Pathanamthita, Kottayam, Trichur, Palakkad, Malappuram and Kozhikode) reveals that the average fair value closely follows the notional value estimated through the income capitalization model (Rs. 21 lakh per acre for Kerala, which is the highest among the States and almost double the All-India average; compared to the lowest of about Rs. 5.0 lakh per acre for Rajasthan).

Tracking market value of land: It is generally observed that market values of land are much higher than the notional values derived from the income capitalization model. Therefore, market values of land are also tracked using online real estate price quotations. The demand prices, segregated for categories like coffee and pepper plantations, land used to grow coconut, paddy and rubber and other general crops are collected. These prices are averaged based on area weights for different crops in Kerala derived from the "Facts and Figures about Agriculture in Kerala", published by the Department of Agriculture, Government of Kerala in 2013. The average demand price has been reduced by 10 per cent to account for the fact that the price quotations given online could be higher than the actual settlement prices.

For Kerala, the adjusted average market price is about thrice the notional of land that is shown above from the income capitalization model. A more limited analysis has been done for Tamil Nadu, which showed that the market price is almost twice as high as the notional prices. The difference is less pronounced in Karnataka.

Annex IV. House tax potential

The following data sources are employed to draw inferences on the house tax potential:

a. The State-wise housing data from Census 2011;
b. The report on 'drinking water, sanitation, hygiene and housing condition in India' of the National Sample Survey Office, based on its 69th Round conducted during July-December 2012 and the corresponding unit level data;
c. Online data on size of houses and their prices from widely quoted real estate websites.

Valuation: Census 2011 provides information on the distribution of households according to the number of rooms possessed by them, but not on the area of houses. The area of dwelling rooms taken from the NSSO 69th Round is combined with the Census data and the CPWD plinth area rate of construction, adjusted reasonably for post-construction value addition and depriciation thereafter, to make valuation of houses. For Kerala, Tamil Nadu, Karnataka and Andhra Pradesh, the calculations of size of houses have been revised by supplementing online real estate information, with appropriate adjustments to account for the fact that online advertisements are generally floated for the upper end of the housing spectrum. Reliable online information could not be sourced for many other States.

Annex V. Differences in the Own revenue (OR) collections in the Village Panchayats of Tamil Nadu

Own revenue (OR) collections in the Village Panchayats of Tamil Nadu				
Statistic	**2014-15 (Rs. in lakh)**	**2014-15 per capita (in Rs.)**	**2011-15 (Rs. in lakh)**	**2011-15 per capita (in Rs.)**
Number of Panchayats	12,506	12,506	12,506	12,506
Mean	5.0	140.6	19.1	540.1
Standard Deviation	16.0	445.7	56.3	1479.9
25th percentile	0.9	44.2	4.0	191.5
50th percentile (median)	1.8	72.9	7.5	307.1
75th percentile	4.1	132.4	16.0	534.4
Minimum value	0.0	0.0	0.0	0.0
Maximum value	649.5	25261.7	1827.6	61753.3

Source : Tamil Nadu Data Analytics Unit.

CHAPTER 5: IS THERE A "LATE CONVERGER STALL" IN ECONOMIC DEVELOPMENT? CAN INDIA ESCAPE IT?

Annex I. Methdology for structural transformation decomposition

The Groningen data (Timmer, de Vries, & de Vries, 2014) distinguishes 10 sectors. We focus on three of these, distinguishing within-sector productivity growth and shifts between sectors. We measure real value added per worker, y_{cst}, and employment shares, θ_{cst}, for each of the 10-sectors, *s*, and 42 economies, *c*, in the GGDC database, focusing on the period from 1980 to 2010.

$$y_{ct} = \sum_{s} \theta_{cst} y_{cst}$$

Taking first-differences and dividing by initial levels yields the following decomposition, a la McMillan et al (2016):

$$\frac{\Delta y_{ct}}{y_{c,t-1}} = \sum_{s} \Delta\theta_{cst} \frac{y_{cs,t-1}}{y_{c,t-1}} + \sum_{s} \theta_{cst} \frac{\Delta y_{cst}}{y_{c,t-1}} + \sum_{s} \Delta\theta_{cst} \frac{\Delta y_{cst}}{y_{c,t-1}}$$

For the purposes of this analysis, we associate structural transformation with three "modern" sectors among the ten sectors in the GGDC data, which we dnote by the set *M* = {manufacturing; transport, storage and communication; and finance, insurance, real estate and business services}. To measure the within-sector component of "good" growth, we sum up the first term in the decomposition for these three "modern" sectors.

Within sector growth $\sum_{s \in M} \Delta\theta_{cst} \frac{y_{cs,t-1}}{y_{c,t-1}}$

For the narrower structural transformation component of "good" growth, we sum up the second and third term of the decomposition for the same three sectors:

Structural transformation = $\sum_{s \in M} \theta_{cst} \frac{\Delta y_{cst}}{y_{c,t-1}} + \sum_{s \in M} \Delta\theta_{cst} \frac{\Delta y_{cst}}{y_{c,t-1}}$

These two expressions, comprise "good growth" and correspond to the blue and red shaded regions in Figure 4.

CHAPTER 6: CLIMATE, CLIMATE CHANGE, AND AGRICULTURE

Annex I. Climate, Climate Change and Agriculture: Data, Sources and Methodology

The following are the dataset and their respective sources used in the analysis in the chapter are described in Section 1. The econometric methodology is described in Section 2.

1.Data and Sources

Weather

Data on temperature and precipitation are obtained from the following sources[7].

Data	Source	Number of Stations (All India)	Years	Temporal Resolution	Grid Size
Precipitation (IMD)	Indian Meteorology Department	2140	1950-2015	Daily	1 degree by 1 degree
Precipitation (Delaware)	University of Delaware (sourced from GHCN/IMD)	300	1950-2015	Monthly	0.5 degree by 0.5 degree
Temperature (IMD)	Indian Meteorology Department	210	1950-2015	Monthly	0.5 degree by 0.5 degree
Temperature (IMD)	Indian Meteorology Department	210	1950-2015	Daily	1 degree by 1 degree
Temperature (Delaware)	University of Delaware (sourced from GHCN/IMD)	45	1950-2015	Monthly	0.5 degree by 0.5 degree

Agriculture

Two sources of agricultural data were used for the analysis. For the period 1966-2010, a data set compiled by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) was used. For major crops, this data set provides information on production and area under cultivation. The crops included in this data set are: Rice, Maize, Sorghum, Pulses, Cotton, Groundnut, Pearl Millet, Finger Millet, Soya, Wheat, Barley, Chickpea, Lineseed, and Rape and Mustard Seed. For a subset of these crops, ICRISAT also provides data on farm harvest prices – the prices received by the farmer at the first point of sale. This was used to construct measures of farm revenue (per unit area).

This data set covers 19 major states including Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Bihar, West Bengal, Orissa, Assam, Himachal Pradesh, Kerala, Chhattisgarh, Jharkhand and Uttarakhand. All the data provide by ICRISAT corresponds to 1966 district boundaries.

For the period 2011-2014, a data set provided by the Ministry of Agriculture on crop production and area was used. To maintain comparability, this data was aggregated to 1966 district boundaries.

2. Empirical Methodology

7 Calculations for Section 2 of the chapter are based on raw gridded temperature and rainfall data and for Section 3 are based on 100 km buffered estimates of temperature and rainfall values.

This section describes the methodology used to arrive at the results in Section 3. The main idea is to exploit the panel structure of the data set, to study the impact of changes in weather on agricultural performance *within* a district over time. It is well established that the relationship between weather and agricultural performance is highly non-linear (Deschenes and Greenstone, 2007). There are several ways to deal with this non-linearity. For example, the IMF (2017) estimates regressions where the explanatory variables include the level and quadratic terms for temperature and precipitation.

Here a different approach is followed. Specifically regressions of the following form were estimated:

$$Y_{cdt} = \alpha_0 + \alpha_1 Temperature\ Shock_{dt} + \alpha_2 Rain\ Shock_{dt} + \gamma_{cd} + \delta_{ct}$$

Here , Y_{cdt} refers to the outcome variable of interest - Log(Yields) and Log(Value of Production) - for crop c in district d in year t. The variable "Bad Temperature Shock" is a dummy variable, which takes the value 1 if the temperature in district d in year t is in the top 20 percentiles of the district-specific temperature distribution.

Similarly, "Bad Rainfall Shock" takes the value 1 if rainfall in district d in year t is in the top 20 percentile of the district specific rainfall distribution[8]. γ_{cd} refer to crop specific district fixed effects, which capture any time-invariant fixed differences between districts – soil quality, average temperature and rainfall etc. Similarly, δ_{ct} are year fixed effects, which capture the effects of shocks, which are common across districts in a given year. These could include changes in technology (such as the Green Revolution), or changes in government policy such as an increase in the Minimum Support Price (MSP). In all regressions, standard errors are clustered as the district level.

Set up this way, these regressions identify the effects of weather *within* a district over time. The coefficient on the Temperature Shock variable estimates how much yields fell by in a district in a high temperature year relative to a "normal" temperature year. Similarly, the coefficient on the Rainfall Shock variable answers the following question: how much do yields in a district fall by in a low rainfall year relative to a normal year? The first column of Tables A.1-A.4 below report the coefficients from this regression.

The reason for choosing this specification over the other available options is that the effects of temperature and rainfall are the strongest when deviations from "normal levels" are the largest. This was shown in Figures 9 and 10, where the right tail of the temperature distribution and left tail of the rainfall distribution were associated with the largest reduction in yields. The regression associated with that figure is shown below:

$$Y_{cdt} = \alpha_0 + \beta_i Temperature\ Decile_{dt} + \gamma_i Rainfall\ Decile_{dt} + \gamma_{cd} + \delta_{ct}$$

Here, each of the 10 deciles for temperature and rainfall are treated as dummy variables, with the 5th decile being the excluded category. The coefficient β_{10} is therefore the average difference in productivity when temperature is in the 10th decile as against the 5th decile. Similarly, the coefficient γ_1 is the average difference in productivity when rainfall is in the first decile as against the 5th decile. Figures 8 and 9 in the main chapter simply plot these regression coefficients.

To study how the effects of weather are different between irrigated and unirrigated areas, we augment the above regression with an interaction term:

8 In all regressions, rainfall shocks are defined on the basis of rainfall during the months of June to September. Temperature shocks are defined on the basis of average daily temperatures in the period June to September for Kharif crops, and October to December for Rabi crops.

$$Y_{cdt} = \alpha_0 + \alpha_1 Temperature\ Shock_{dt} + \beta_1 Temperature\ Shock_{dt} * Irrigation_{dt} + \alpha_2 Rain\ Shock_{dt} + \beta_2 Rain\ Shock_{dt} * Irrigation_{dt} + \gamma_{cd} + \delta_{ct}$$

How can the above equation be interpreted? The coefficient on the rainfall and temperature shock estimates the effects of bad rainfall and bad temperature shocks in a district which has 0 irrigation. $\alpha_1 + \beta_1$ and $\alpha_2 + \beta_2$ give us the effects of extreme weather in districts where 100% of agricultural land is irrigated. A positive value for α_1, combined with a negative value for β_1 would imply that temperature shocks lower productivity in un-irrigated areas, but have a weaker effect in irrigated areas. The results of this specification can be seen in the second column of Tables A1-A4. The effects of adverse temperature and rainfall shocks are felt strongly in unirrigated areas, whereas in completed irrigated area (where the proportion of irrigated area equals 1), the effects are zero.

The chapter reports results from regressions estimated separately for irrigated and unirrigated areas separately. We define a district to be irrigated if at least 50% of it Net Cropped Area was irrigated in 2010. All other districts are treated as un-irrigated.

Finally, the literature suggests that several factors over and above the average level of rainfall matter for agricultural yields. Because we have daily data we can check whether the distribution of rainfall within a month during the Kharif and Rabi seasons allows us to explicitly test for these alternative channels. To do so, we estimate regressions of the following form (separately for irrigated and un-irrigated areas).

$$Y_{cdt} = \alpha_0 + \alpha_1 Temperature\ Shock_{dt} + \alpha_2 Rain\ Shock_{dt} + \alpha_3 DryDay_{dt} + \gamma_{cd} + \delta_{ct}$$

$DryDay_{dt}$ refers to the number of days during the monsoon where rainfall was less than 0.1mm. The results from this regression are reported in column 3 of Tables A1-A4. As is clear from the table, even after controlling for rainfall shocks, the number of dry days matters for agricultural output.

Table A.1. Effects of Weather on Kharif Yields

	Log(Yields)	Log(Yields)	Log(Yields)
Bad Temperature Shock	-0.0463***	-0.0741***	-0.0360***
	(0.00552)	(0.0105)	(0.0101)
Irrigation*Bad Temperature Shock		0.0750***	0.00527
		(0.0190)	(0.0183)
Bad Rain Shock	-0.131***	-0.243***	-0.190***
	(0.00562)	(0.0113)	(0.0100)
Irrigation*Bad Rain Shock		0.283***	0.207***
		(0.0196)	(0.0184)
Number of Dry Days			-0.00615***
			(0.000446)

Irrigation*Number of Dry Days			0.00661***
			(0.000716)
Crop District FE	Yes	Yes	Yes
Crop Year FE	Yes	Yes	Yes
Observations	73,198	69,301	69,301
R-squared	0.772	0.766	0.768

*Notes: In all the tables, standard errors, clustered at the district level, are reported in brackets. ***, **, and * denote significance at the 1percent, 5 percent, and 10 percent confidence intervals, respectively.*

Table A.2. Effects of Weather on Kharif Revenues

	Log(Revenue)	Log(Revenue)	Log(Revenue)
Bad Temperature Shock	-0.0428***	-0.0952***	-0.0385***
	(0.00815)	(0.0141)	(0.0135)
Irrigation*Bad Temperature Shock		0.140***	0.0136
		(0.0289)	(0.0276)
Bad Rain Shock	-0.140***	-0.247***	-0.175***
	(0.00895)	(0.0168)	(0.0147)
Irrigation*Bad Rain Shock		0.300***	0.166***
		(0.0307)	(0.0294)
Number of Dry Days			-0.00750***
			(0.000628)
Irrigation*Number of Dry Days			0.0109***
			(0.00104)
Crop District FE	Yes	Yes	Yes
Crop Year FE	Yes	Yes	Yes
Observations	34,263	34,263	34,263
R-squared	0.894	0.895	0.897

Table A.3. Effects of Weather on Rabi Yields

	Log(Yields)	Log(Yields)	Log(Yields)
Bad Temperature Shock	-0.0472***	-0.127***	-0.103***
	(0.00632)	(0.0105)	(0.0106)
Irrigation*Bad Temperature Shock		0.185***	0.134***
		(0.0170)	(0.0166)
Bad Rain Shock	-0.0679***	-0.116***	-0.0681***
	(0.00476)	(0.00831)	(0.00903)
Irrigation*Bad Rain Shock		0.111***	0.00449
		(0.0154)	(0.0167)
Number of Dry Days			-0.00411***
			(0.000399)
Irrigation*Number of Dry Days			0.00719***
			(0.000684)
Crop District FE	Yes	Yes	Yes
Crop Year FE	Yes	Yes	Yes
Observations	41,864	37,649	37,649
R-squared	0.826	0.820	0.822

Table A.4. Effects of Weather on Rabi Revenues

	Log(Revenue)	Log(Revenue)	Log(Revenue)
Bad Temperature Shock	-0.0416***	-0.127***	-0.103***
	(0.00835)	(0.0137)	(0.0138)
Irrigation*Bad Temperature Shock		0.211***	0.154***
		(0.0230)	(0.0228)
Bad Rain Shock	-0.0558***	-0.0901***	-0.0438***
	(0.00652)	(0.0107)	(0.0114)
Irrigation*Bad Rain Shock		0.0876***	-0.0259
		(0.0204)	(0.0222)
Number of Dry Days			-0.00388***
			(0.000482)
Irrigation*Number of Dry Days			0.00709***
			(0.000812)
Crop District FE	Yes	Yes	Yes
Crop Year FE	Yes	Yes	Yes
Observations	25,979	24,473	24,473
R-squared	0.929	0.928	0.929

Code	Name	Code	Name
AP	Andhra Pradesh	MH	Maharashtra
AR	Arunachal Pradesh	MN	Manipur
AS	Assam	MG	Meghalaya
BR	Bihar	MZ	Mizoram
CG	Chhattisgarh	NA	Nagaland
DL	Delhi	OD	Odisha
GA	Goa	PB	Punjab
GJ	Gujarat	RJ	Rajasthan
HR	Haryana	SK	Sikkim
HP	Himachal Pradesh	TN	Tamil Nadu
JK	Jammu And Kashmir	TL	Telangana
JH	Jharkhand	TR	Tripura
KA	Karnataka	UP	Uttar Pradesh
KL	Kerala	UK	Uttarakhand
MP	Madhya Pradesh	WB	West Bengal

[1] Using logit specification also gives similar results.

CHAPTER 7: GENDER AND SON META-PREFERENCE : IS DEVELOPMENT ITSELF AND ANTIDOTE

Annex I. Calculation of Gender Dimensions and Regression Specifications

This Annex explains in detail both the treatment of the NFHS variables in order to arrive at the gender dimensions and the regression specifications used in the chapter. All the regressions are run using the women's recode section of the Demographic and Health Survey (DHS) and National Family Health Survey (NFHS) survey data.

On the 17 gender-related indicators, the following methods were used to construct each:

- On agency related indicators, the cohort selected is of married women between the ages of 15 and 49, who report that they are involved in the making of decisions – whether they be solely the decision makers or be jointly making the decision with their husband/partner.
- On attitude related indicators, the cohort selected is of married women between the ages of 15 and 49.
- On the outcomes of employment and education (women who are employed, women who are employed in non-manual sector, and women who are educated), the cohort selected is of all women surveyed. Women having received any level of education – primary, secondary or higher – are counted as being "educated". Similarly, women who are currently working are counted as being "employed". Conditional on the women being employed, the number of women employed in non-manual sector is calculated if women report that they are working in professional, clerical, sales or services professions.
- On the outcomes concerning contraceptive methods, spousal violence, earnings with respect to husband, age of female at marriage and first child birth, the cohort selected is of married women between the ages of 15 and 49.
- For the outcome on contraception, the women who respond with not using any method are not taken in the sample, and those who respond with any of the measures other than sterilization are included.

The following regression was used to create Table 1 in the chapter[1]:-

$$Outcome_i = \alpha + \beta_1.W_i + \beta_2.IND + \beta_3.W_i.IND + \varepsilon_i$$

Where:

W_i is the wealth factor score provided by DHS/NFHS, for individual i.

IND takes the value 1 for India and 0 for all other countries.

ε_i is the error term.

Specifically, it tests the hypothesis that gender indicators in India improve with wealth, and also whether these improvements are stronger in India relative to other countries.

β_2, if negative and significant, implies India is below the average of rest of the countries. If positive, India is doing better than the average country in the sample.

β_3, if negative, implies the responsiveness of gender outcome to increase in wealth score for India is less

than that of other countries. A positive coefficient implies that improvements with wealth in India are greater than in the average country in the sample.

If β_3 is negative, India may not catch up with other countries. However, if β_3 positive, India is expected to catch up with the rest of the countries in the future as GDP growth translates into higher household wealth.

List of countries and states used for creating balanced panel in regressions:

Code	Name	Code	Name
IND	India	NP	Nepal
AF	Afghanistan	NG	Nigeria
BD	Bangladesh	PK	Pakistan
BR	Brazil	PH	Philippines
KH	Cambodia	ZA	South Africa
EG	Egypt	LK	Sri Lanka
GH	Ghana	TH	Thailand
ID	Indonesia	TR	Turkey
MX	Mexico	SN	Senegal
MM	Myanmar	TZ	Tanzania
AM	Armenia	BF	Burkina Faso
AO	Angola	BJ	Benin
CM	Cameroon	CO	Colombia
DR	Dominican Republic	HT	Haiti
JO	Jordan	LS	Lesotho
MD	Madagascar	ML	Mali
MW	Malawi	MZ	Mozambique
NI	Niger	TD	Chad
ZW	Zimbabwe	CN	China
CN	China	KR	Korea
JP	Japan	US	United States of America
UY	Uruguay		

Code	Name	Code	Name
AP	Andhra Pradesh	MH	Maharashtra
AR	Arunachal Pradesh	MN	Manipur
AS	Assam	MG	Meghalaya
BR	Bihar	MZ	Mizoram
CG	Chhattisgarh	NA	Nagaland
DL	Delhi	OD	Odisha
GA	Goa	PB	Punjab
GJ	Gujarat	RJ	Rajasthan
HR	Haryana	SK	Sikkim
HP	Himachal Pradesh	TN	Tamil Nadu
JK	Jammu And Kashmir	TL	Telangana
JH	Jharkhand	TR	Tripura
KA	Karnataka	UP	Uttar Pradesh
KL	Kerala	UK	Uttarakhand
MP	Madhya Pradesh	WB	West Bengal

Annex II. Banning of sex selection: A Case Study of South Korea and India

Guilmoto (2009) identified three conditions that are necessary for abnormally high SRBs: a preference for sons that is strong enough to motivate sex selection, low fertility that generates a "fertility squeeze," and access to sex-detection technology (Yoo et al, 2016). Figures 1A and 1B show how things have evolved in South Korea and India since the early 1970s. Son preference in both these nations coupled with availability of sex detection technology in early 1980s and falling fertility rate led to highly skewed sex ratios at birth in both the countries.

Worried by the worsening sex ratio, both the countries banned sex selective abortion – Korea in 1987 and India in 1994. The implementation of the law was very effective in Korea as a result of which SRB was back to lower levels by mid-2000, although still above the level of neutrality. The Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 (PNDT), on the other hand, was not very effective in India and the SRB continued to worsen. Finally, the act was amended in 2003 which did help

1 This is calculated among mothers who either got sterilized or crossed the age of 40 – and therefore can't have more children.

2 This is because the biological male to female sex-ratio is 1.05, and therefore the biological female to male ratio is 1/1.05 = 0.95.

in preventing further deterioration, especially in the face of declining fertility. The level of SRB, however, continues to remain abnormally elevated.

Figure 1A. SRB and TFR in India

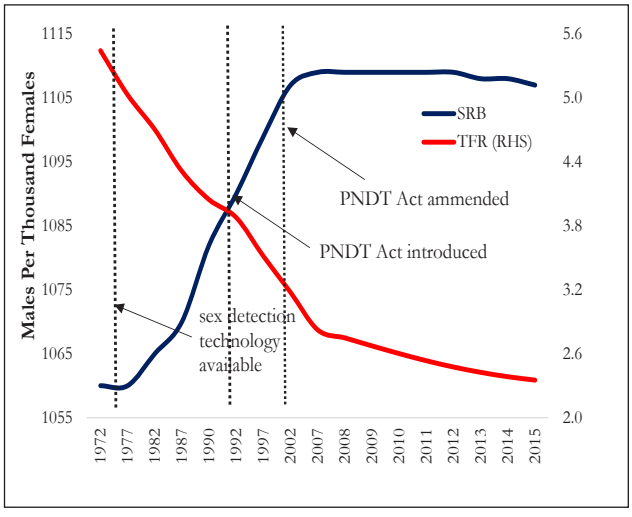
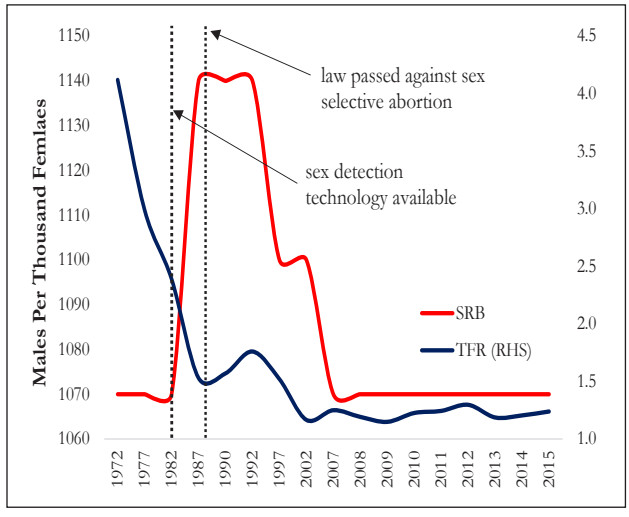


Figure 1B. SRB and TFR in South Korea



Source : WDI.

Annex III. Methodology for estimating "unwanted" girls

The central idea behind trying to compute the extent of son "meta" preference and the number of unwanted girls is that at any birth order, parents who have a girl child are more likely to continue having children than parents who had a boy. Among the set of families who continue having children, the difference between the actual sex ratio and the ideal sex ratio gives us an estimate of the number of unwanted girls.

Specifically, for each birth order "i", consider the set of families who had strictly more than "i" children. The number of unwanted girls is given by:

$$Unwanted\ girls = \Sigma\left(Actual\ \frac{Female}{Male}\ Ratio_i - Ideal\ \frac{Female}{Male}\ Ratio_i\right) * No.of\ Boys_i$$

where "i" = 1,2,3.. is the birth order

Consider, for example, females to males ratio at birth for the second birth order. This ratio has been calculated separately for females for whom the second child is their last child[1] and for females who continued to have more children (females having more than 2 children). The female to male ratio for the first group is found to be 0.64 and 1.16 for the latter. The ideal female to male ratio for any birth order should be 0.95[2]. This deviation from the ideal sex ratio shows us that parents who have a girl child are more likely to continue having children. The magnitude of deviation of the actual female to male ratio from the ideal, in this case 0.21, multiplied with total male children (second in birth order for families having more than 2 children) gives an estimate of "excess" girl children.

The number of "excess" girl children is calculated in the same manner across all the birth orders. The aggregate number is what is termed "unwanted" girls in this analysis.

CHAPTER 9 : EASE OF DOING BUSINESS' NEXT FRONTIER: TIMELY JUSTICE

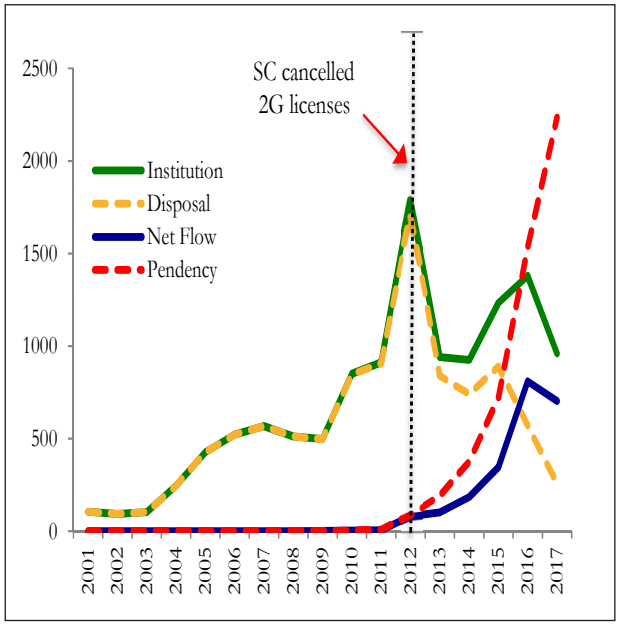
Annex I. Indicator-wise Scores for 'Enforcing Contracts' in the Ease of Doing Business Report, 2018

Indicator	Score
Time (days)	**1445**
Filing and service	45
Trial and judgment	1095
Enforcement of judgment	305
Cost (% of claim value)	**31.0**
Attorney fees	22
Court fees	8.5
Enforcement fees	0.5
Quality of judicial processes index (0-18)	**10.0**
Court structure and proceedings (1-5)	4.5
Case management (0-6)	1.5
Court automation (0-4)	2.0
Alternative dispute resolution (0-3)	2.0

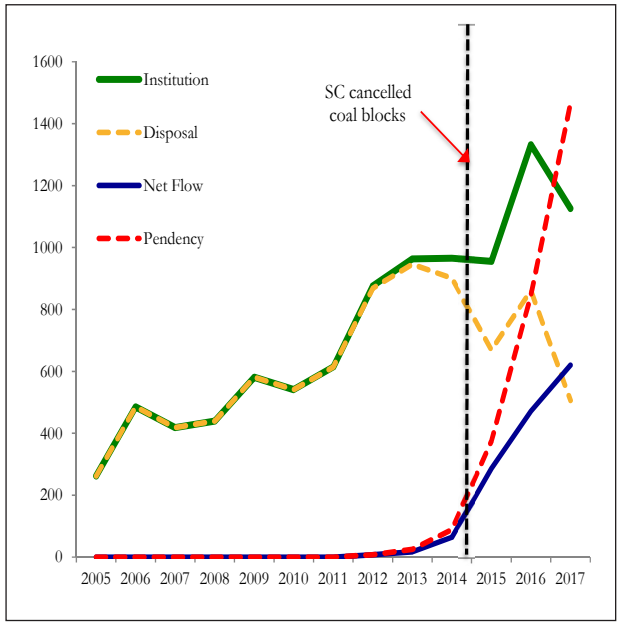
Source : World Bank Ease of Doing Business Report, 2018.

Annex II. Institution, Pendency and Disposal of Cases: Flow (TDSAT and APTEL)

Institution, Pendency and Disposal- TDSAT

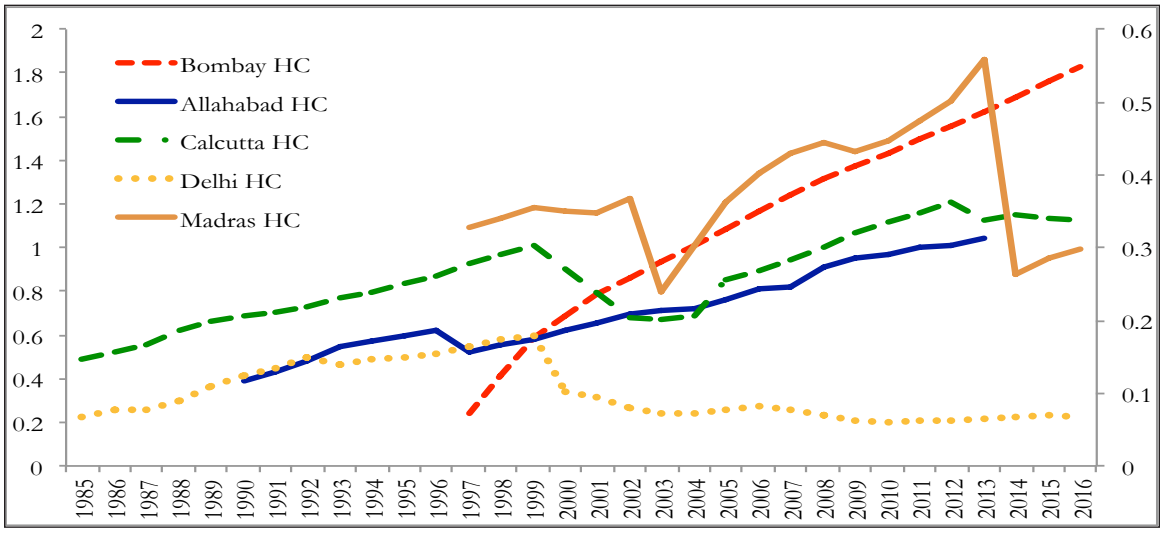


Institution, Pendency and Disposal- APTEL



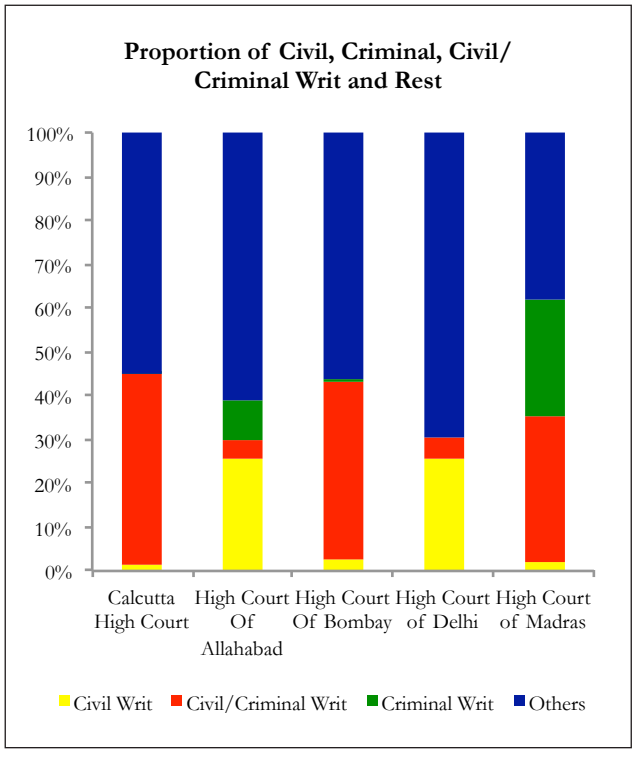
Source: Data from TDSAT and APTEL.

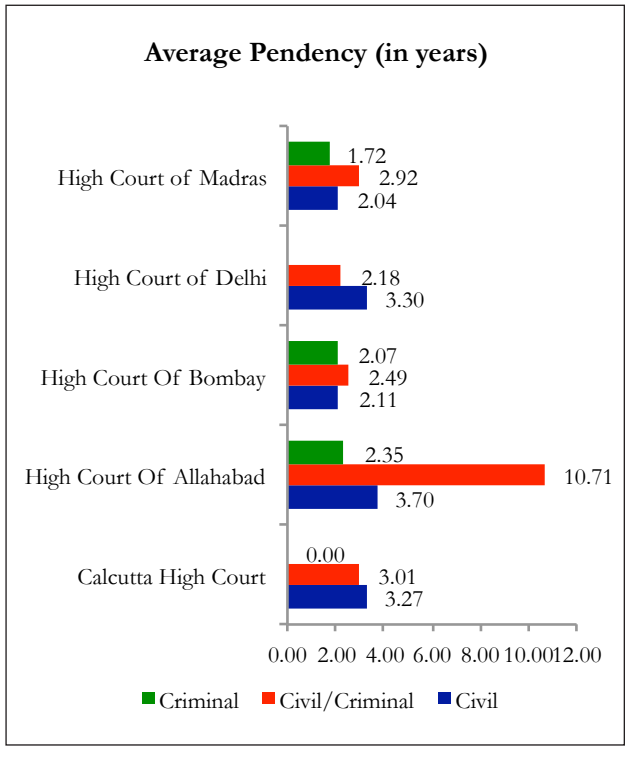
Annex III. Pending Cases: Flow (5 Major High Courts, 1985- 2016 in Millions)



Source : Data from 5 High Courts.

Annex IV. Writ Jurisdiction of 5 High Courts

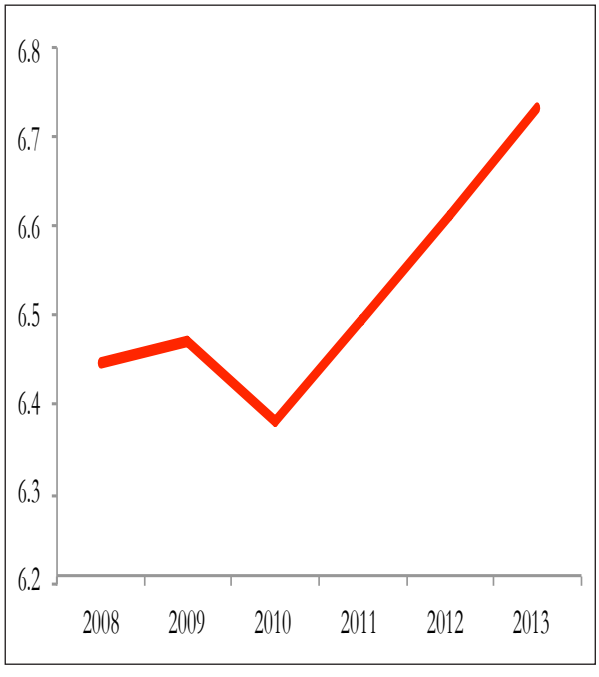




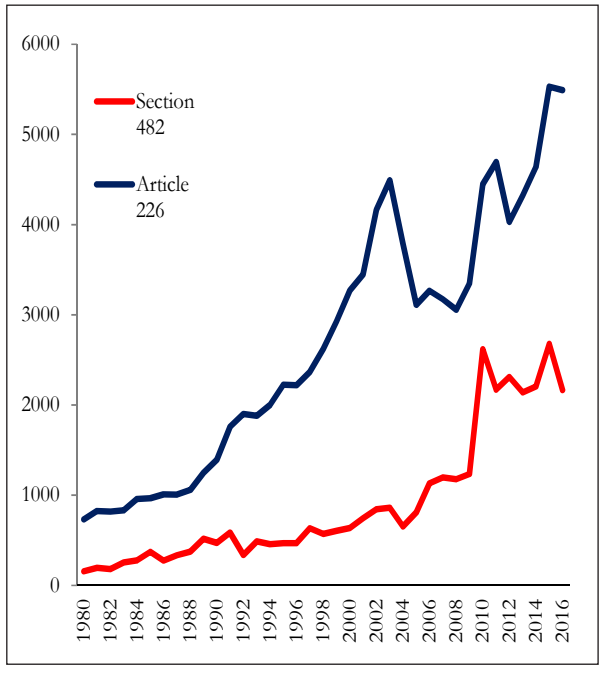
Source : Daksh.

* Data from Daksh used the following methodology: Cases were categorized based on case type and status information available on court websites. Cases without status details were considered to be pending. Average pendency was calculated based on the difference (in days/years) between the current date and the date on which the case was filed. In cases where the date of filing was not provided, the date of filing was taken to be July 1 (middle of the calendar year) of the year of filing provided in the case number. Analysis is based on unique case numbers.

Annex V. Pending Writ Petitions: Flow (5 High Courts, 2008- 13; in lakhs)

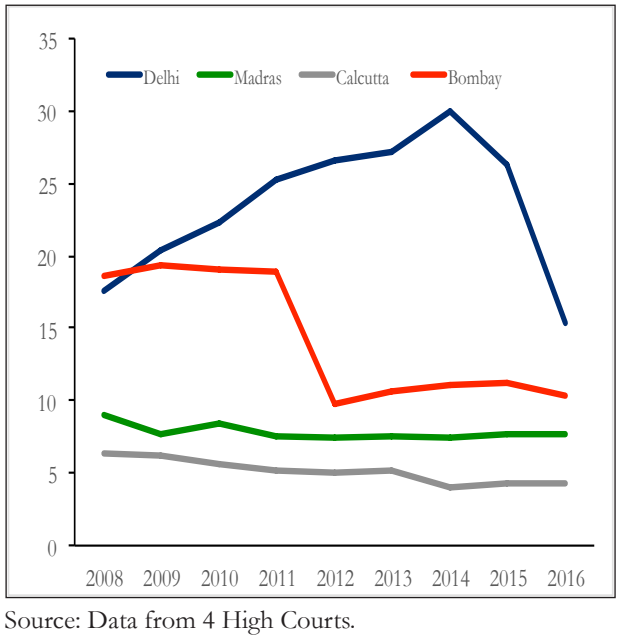


Annex VI. Number of Decisions that relied on Article 226 of the Constitution and Section 482 of the Code of Criminal Procedure: Flow (All High Courts, 1980- 2016 in Thousands)



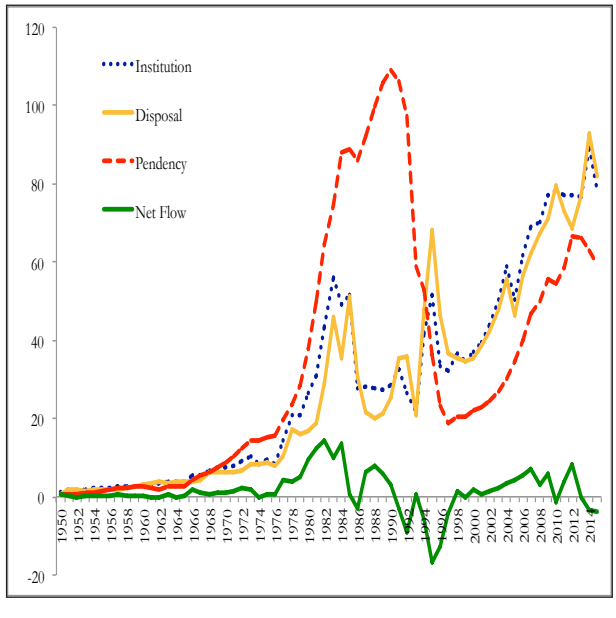
Source : Data from 5 High Courts and Manupatra Information Solutions Pvt. Ltd.

Annex VII. Percentage Share of Original Side of Total Pendency: Flow (4 High Courts, 2008- 2016, in Percentages)



Source: Data from 4 High Courts.

Annex VIII. Pendency- Flow (Supreme Court, 1950- 2016, in Thousands)



Source : Supreme Court of India.[1]

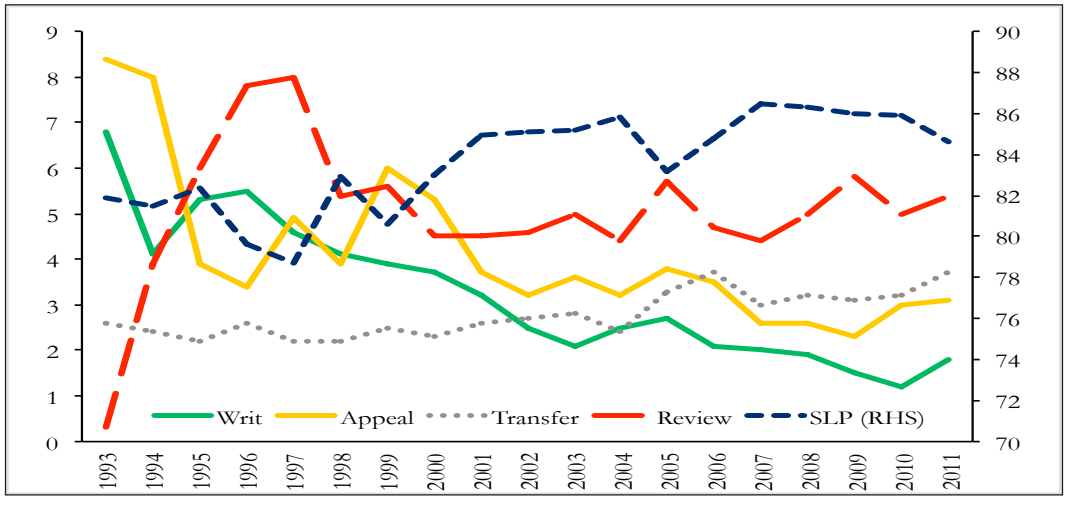
Pendency figures shown up to 1992 indicate the number of matters after expanded hyphenated number on files. From 1993, pendency figures are based on actual file-wise counting, that is, without expanding hyphenated numbers on files.

Annex IX. Percentage of Cases Admitted by US Supreme Court

Type of Cases	2007	2008	2009	2010
Criminal	2.1%	6.4%	2.8%	1.8%
U.S. Civil	1.4%	2.6%	3.2%	1.9%
Private Civil	2.5%	2.0%	2.7%	3.4%
Administrative	2.1%	10.9%	5.5%	11.5%
Total	2.1%	4.2%	2.9%	2.8%

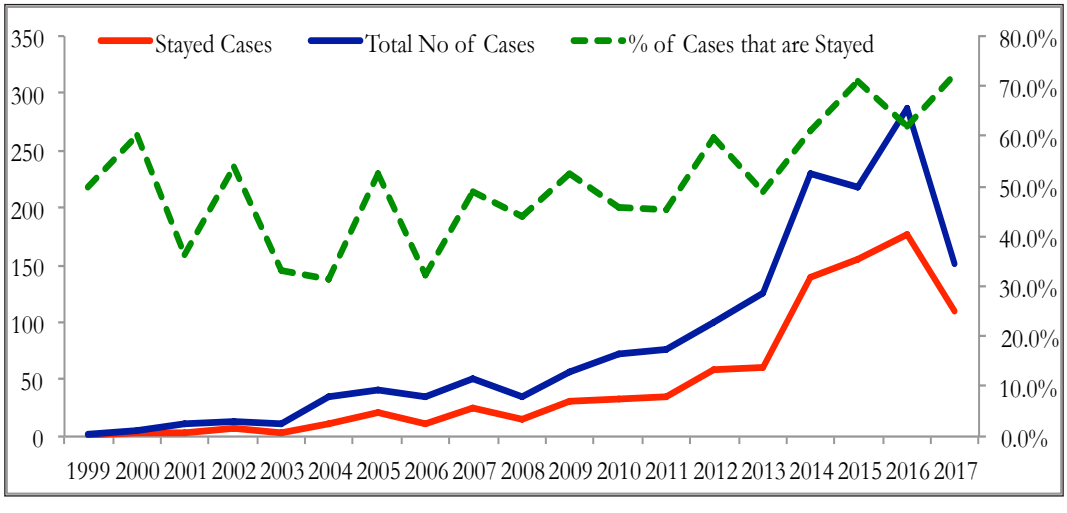
Source: The Supreme Court of the United States Press.

Annex X. Percentage Share of Different Types of Petition of Total Docket: Flow (Supreme Court, 1993- 2011, in Percentages)



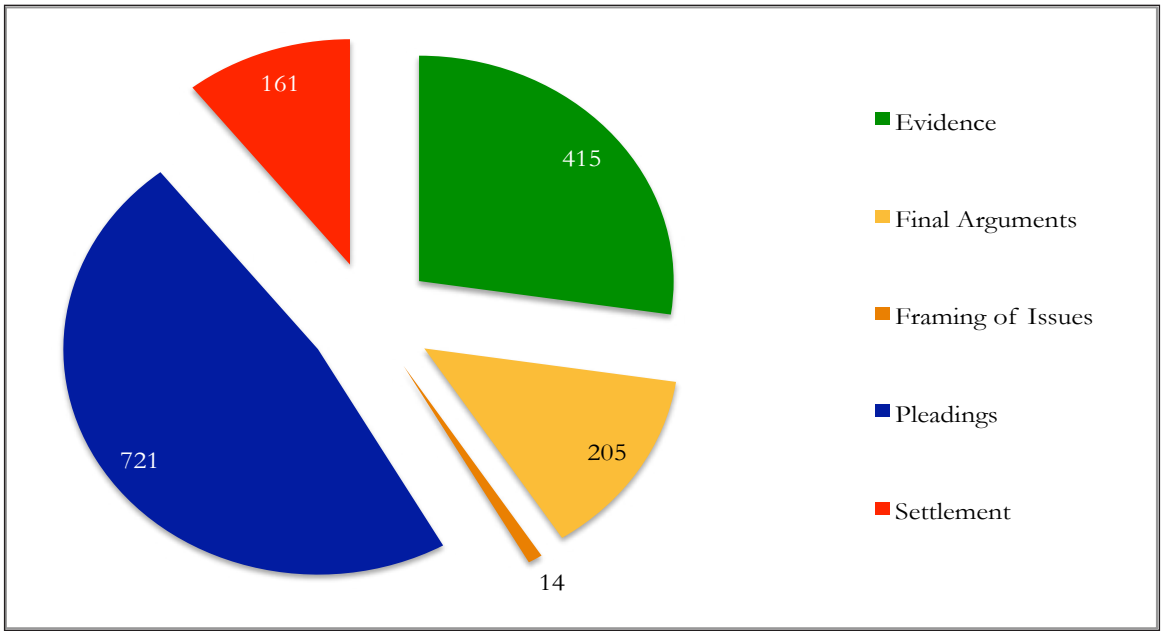
Source: Data from Annual Reports of the Supreme Court and Robinson (2013).

Annex XI. Number and Proportion of Stayed Cases- Flow (1996- 2016, Delhi HC)



Source : Data from the High Court of Delhi.

Annex XII. Profile of Stages of Pending IPR Cases



Source: Data from the High Court of Delhi.

Annex XIII.

Under Paragraph 4.2.15.3 of Master Circular No DBOD.No.BP.BC.9/21.04.048/2014-15 dated July 1, 2014 consolidating guidelines issued to banks on matters relating to prudential norms on income recognition, asset classification and provisioning pertaining to advances, banks are permitted to revise and restructure project loans, due to arbitration proceedings or court cases:

"ii) Banks may restructure project loans, by way of revision of DCCO beyond the time limits quoted at paragraph (i) (a) above and retain the 'standard' asset classification, if the fresh DCCO is fixed within the following limits, and the account continues to be serviced as per the restructured terms:

(a) Infrastructure Projects involving court cases

Up to another two years (beyond the two year period quoted at paragraph 1(a) above, i.e., total extension of four years), in case the reason for extension of DCCO is arbitration proceedings or a court case.

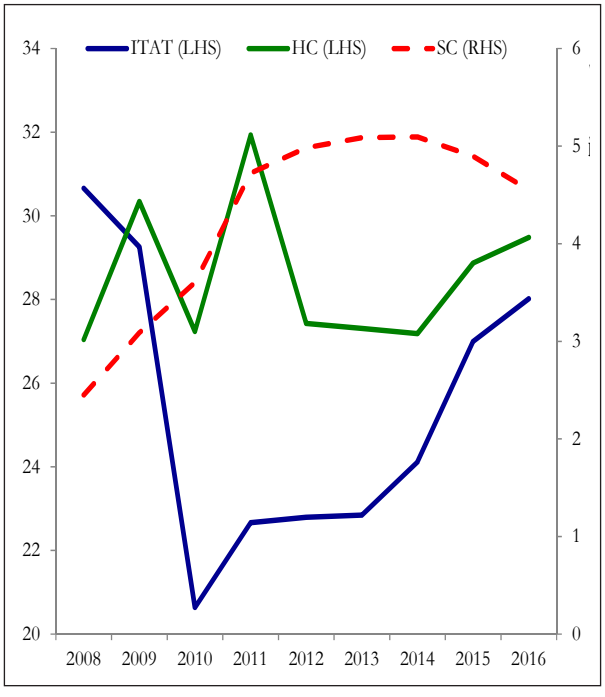
(b) Infrastructure Projects delayed for other reasons beyond the control of promoters

Up to another one year (beyond the two year period quoted at paragraph 1(a) above, i.e., total extension of three years), in case the reason for extension of DCCO is beyond the control of promoters (other than court cases)."

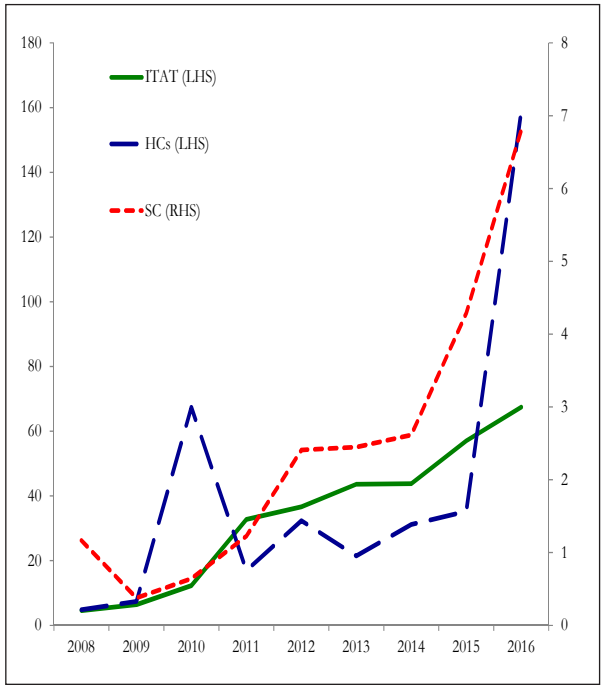
Source: Reserve Bank of India.

Annex XIV. Pendency and Valuation (Rs.) of Department Cases- Direct Taxes

Number of Pending Cases (in thousand)

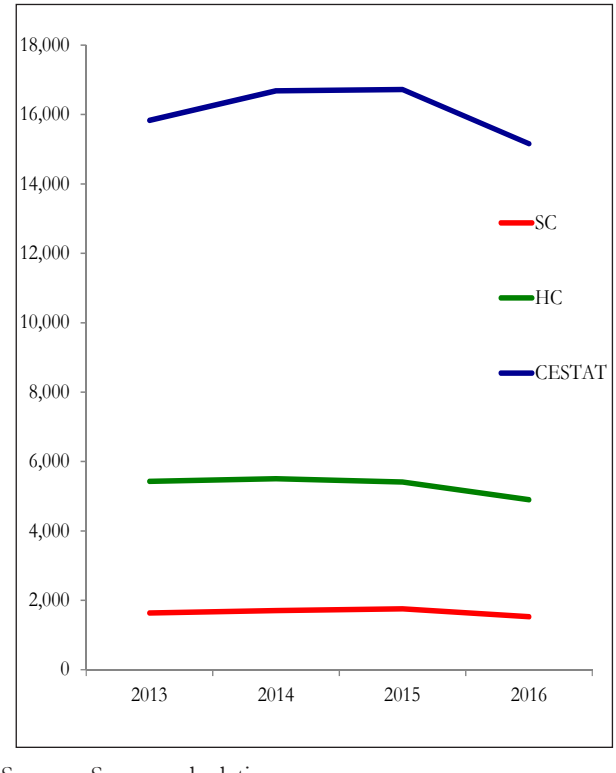


Value of Pending Cases (in lakh)

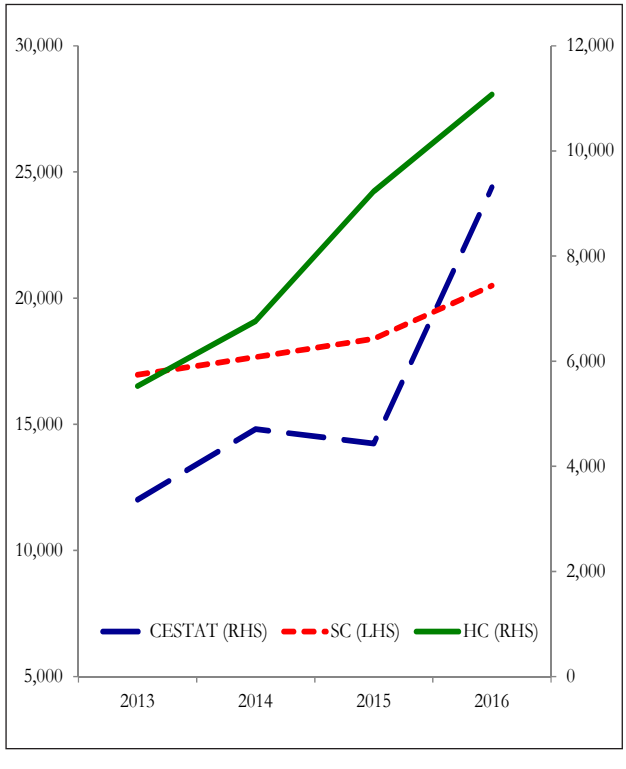


Pendency and Valuation of Department Cases- Indirect Taxes

Number of Pending Cases (in thousand)



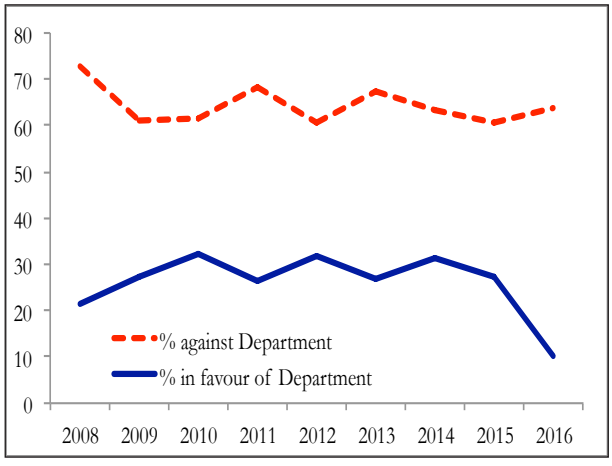
Value of Pending Cases (in lakh)



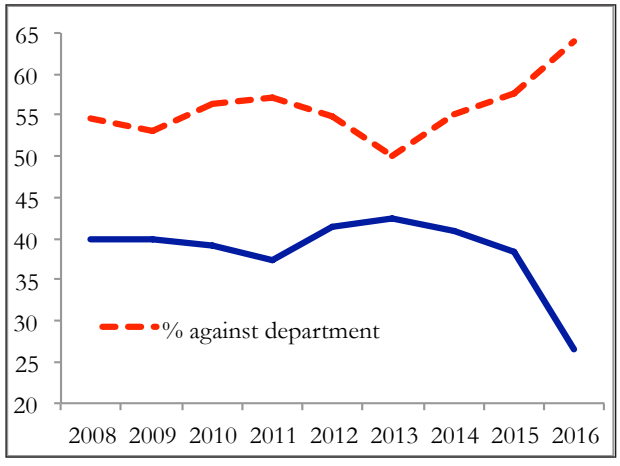
Source : Survey calculations.

Annex XV. Strike Rates of Department of Department Cases

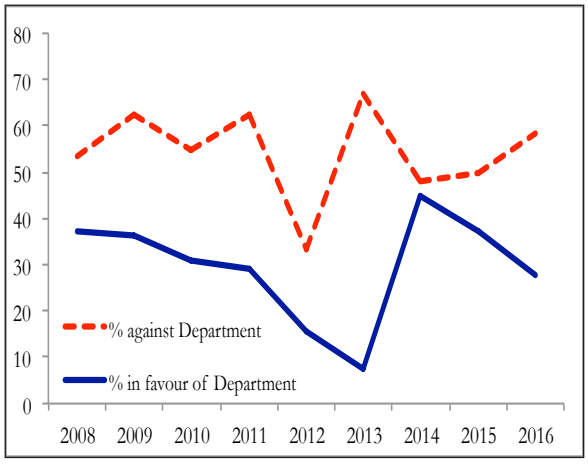
Success Rate of Dept. at ITAT- Direct Taxes



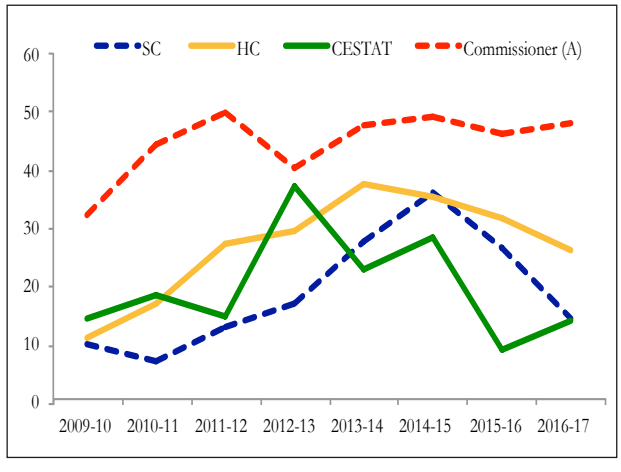
Success Rate of Dept at HC- Direct Taxes



Success Rate of Dept. at Supreme Court- Direct Taxes

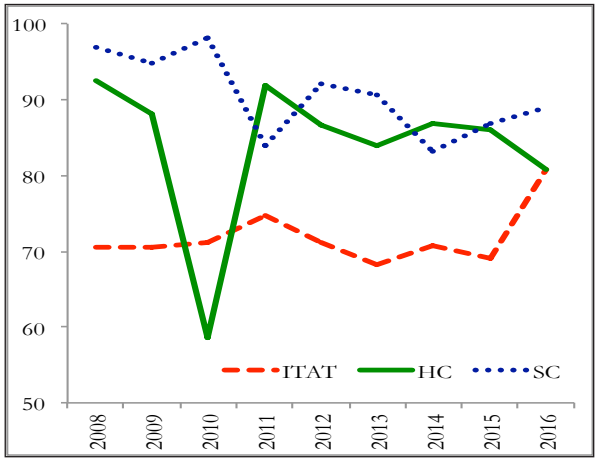


Success Rate of Dept. in Indirect Tax Litigation

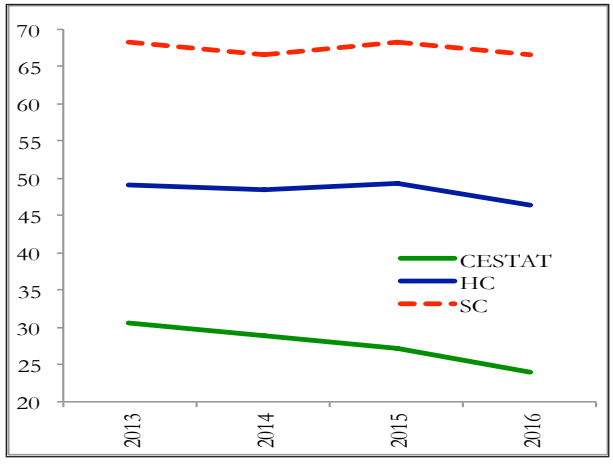


Annex XVI. Department Petition Rates

Petition Rate- Department (Direct Taxes, 2008- 2016, in Percentages)

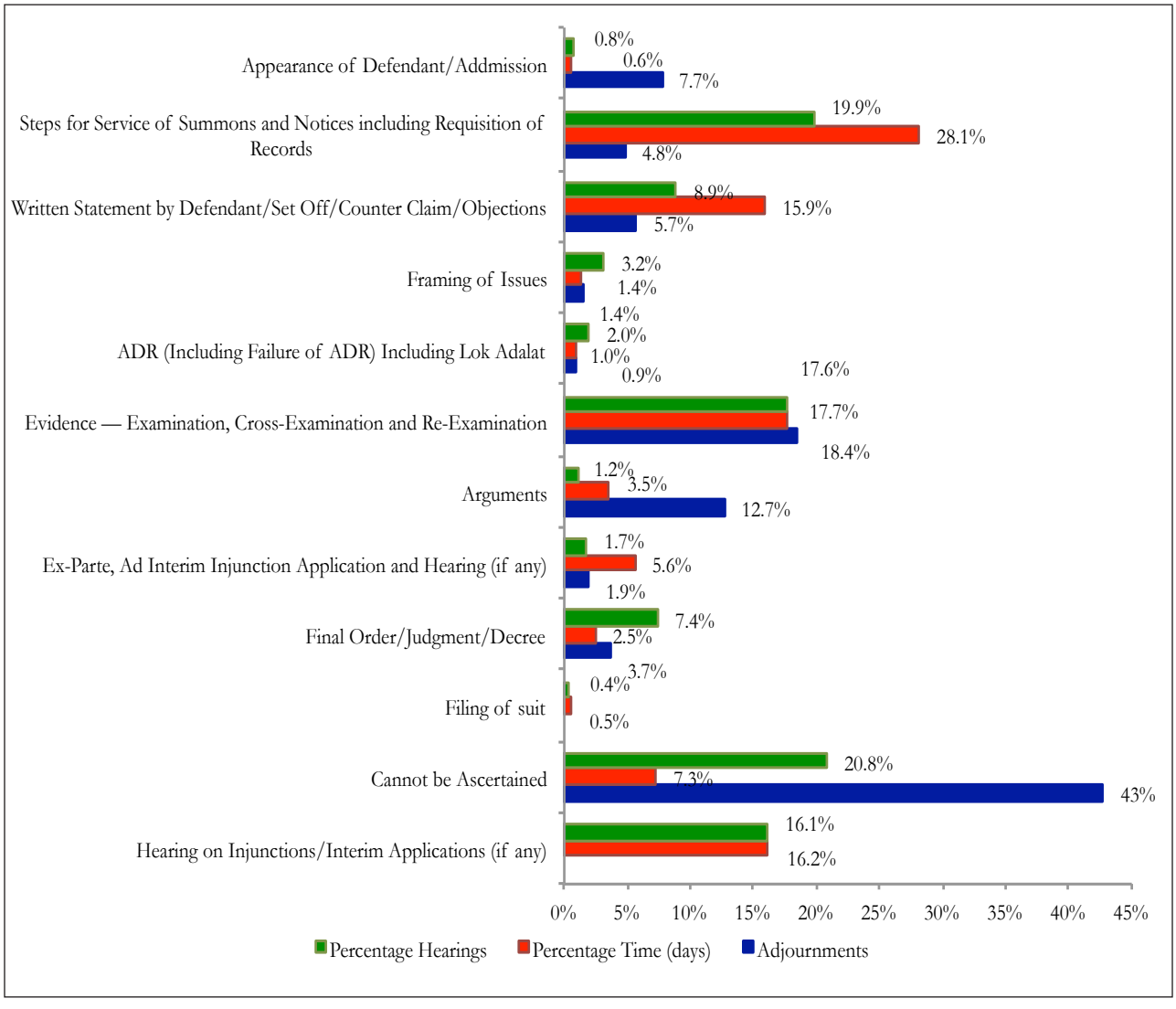


Petition Rate- Department (Indirect Taxes, 2008- 16, in Percentages)



Source : Survey calculations.

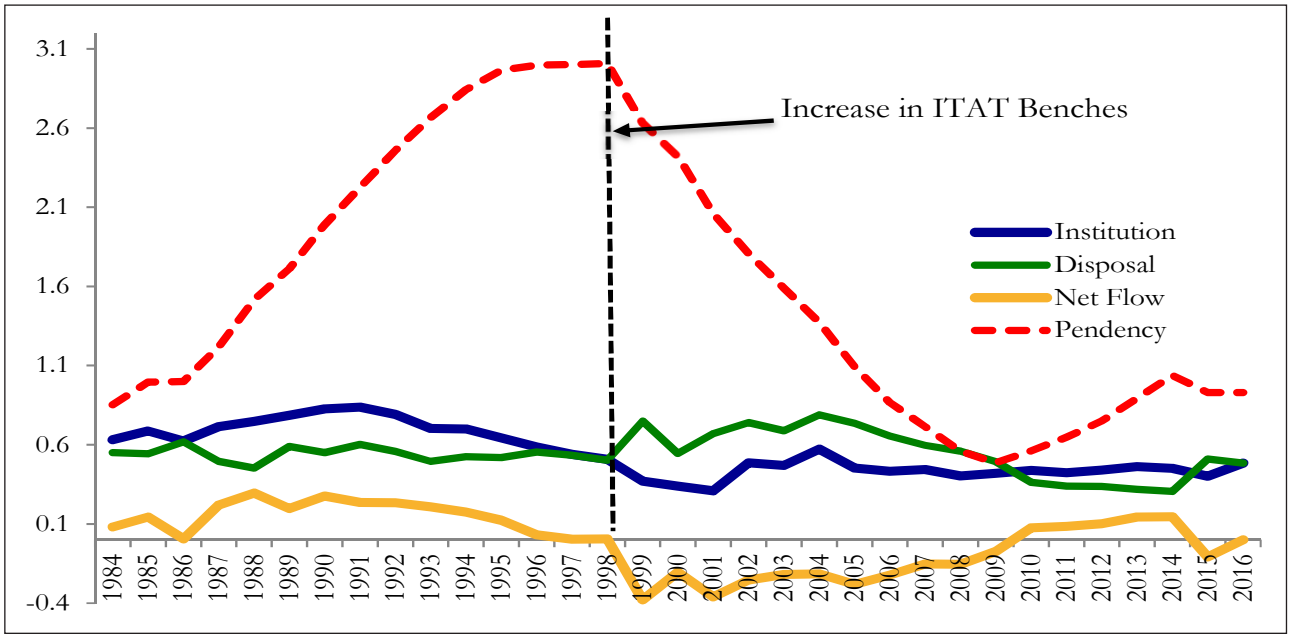
Annex XVII. Stage-wise Breakup of Cases in District Courts



Source : Daksh.

*Daksh's database collates information as put out by the NJDG/e-courts website for each date a case has been listed for. Due to lack of uniformity in data regarding stages the cases go through, a harmonization of the variations is required to carry out any analysis. In this regard, Civil Procedure Code, 1908 and Criminal Procedure Code, 1973 were referred to, to chart out the prominent stages through which a case goes through. The various Case Flow Management Rules adopted by the High Courts were also used for this purpose. However, there were some stages on the NJDG/e-courts website that could not be mapped appropriately and hence, these have been categorized as 'cannot be ascertained

Annex XVIII. Institution, Disposal and Pendency of Income Tax Appellate Tribunals (in lakh)



Source: Income Tax Appellate Tribunal.

Annex XIX. Legislative Measures recommended by the Government Taskforce constituted vide order- dated 23.12.2016 of the Committee of Secretaries

(a) Amendments to the Code of Civil Procedure, 1908

(i) The Commercial Courts Act has by virtue of Section 16 read with Schedule 1 of the Act made amendments to the CPC for the purpose of purpose of proceeding with cases falling within the jurisdiction of the Act. These amendments make substantial changes to the CPC such as imposition of costs, disclosure and inspection norms, case management hearing, summary judgment and other provisions for time bound disposal of commercial cases.

(ii) The CPC may be amended to extend the amendments specified in Schedule 1 of the Commercial Courts Act, to the extent necessary and feasible to all civil/commercial litigation in the country irrespective of the value of the dispute. This was also recommended by the Law Commission in its 253th Report on *'Commercial Division and Commercial Appellate Division* of *High Courts and Commercial Courts Bill, 2015'*

(b) Amendment to the High Court Rules/Power of the High Court to notify commercial courts at district level for cases below Rs 1 crore

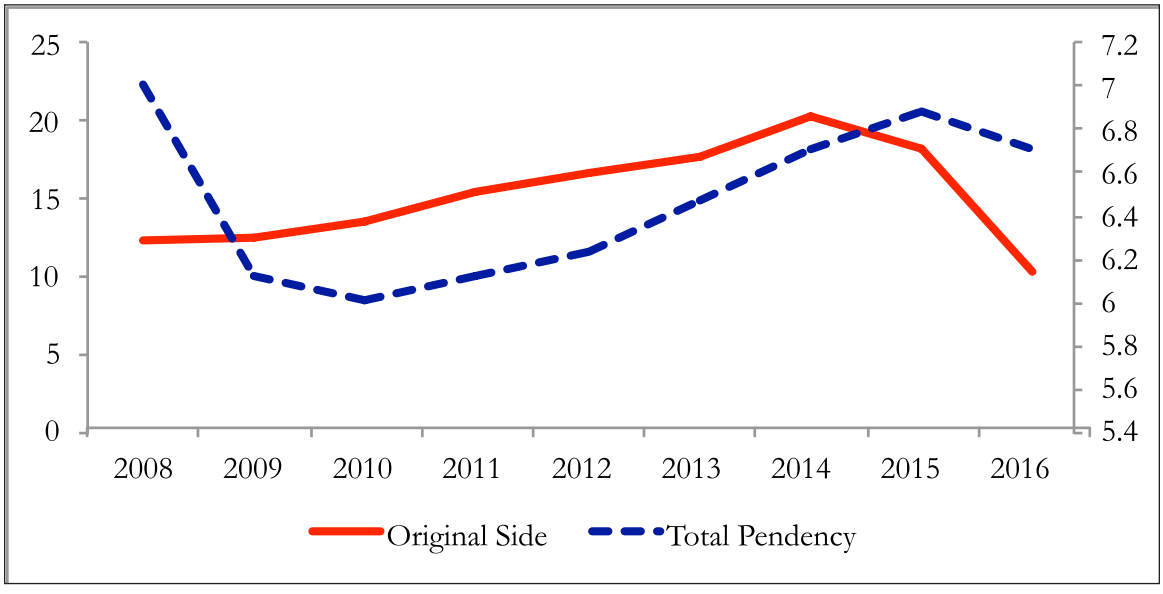
(i) Section 122 of the CPC empowers the High Courts to frame rules for civil courts. The High Court may designate/notify certain district courts as commercial courts for the purpose of disposal of commercial cases below the value of Rs. 1 crore.

(ii) The High Court may in this regard frame rules of procedure for adjudication of such commercial cases by the district court. The Department Related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice in its 78th Report had recommended the High Courts. should be responsible for laying down its own procedures of case and cost management.

(c) Amendment to the Commercial Court Act to revise the specified value

(i) Currently, the Commercial Court Act is only applicable to cases amounting to Rs. 1 crore and above. The Act may be amended to revise the amount of specified value.

Annex XX. Original Side and Total Pendency : Flow (High Court of Delhi, in thousands)



Source : Data from 4 High Courts.

Annex XXI. Questions for which India Received Unfavourable Responses

Question	Answer
Are these time standards respected in more than 50% of cases?	No
Does the law regulate the maximum number of adjournments that can be granted?	Yes
Are adjournments limited to unforeseen and exceptional circumstances?	No
If rules on adjournments exist, are they respected in more than 50% of cases?	No
Is a pretrial conference among the case management techniques used before the competent court?	No
Are there any electronic case management tools in place within the competent court for use by judges?	No
Are there any electronic case management tools in place within the competent court for use by lawyers?	No
Can the initial complaint be led electronically through a dedicated platform within the competent court?	No
Is it possible to carry out service of process electronically for claims led before the competent court?	No
Are there financial incentives for parties to attempt mediation or conciliation (i.e., if mediation or conciliation is successful, a refund of court ling fees, income tax credits or the like)?	No

Source : World Bank's Ease of Doing Business Report.