'Wiping every tear from every eye': the JAM Number Trinity Solution

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03
CHAPTER

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3.1 INTRODUCTION

Sixty-eight years after Independence, poverty remains a pressing problem. No nation can become great when the life chances of so many of its citizens are benighted by poor nutrition, limited by poor learning opportunities, and shrivelled by gender discrimination (discussed in section 13 in this Volume). The recent Annual Survey of Education Report (see Box 9.2 of Volume 2, Chapter 9), which documents that only a quarter of standard III students could do a two-digit subtraction and read a standard II text, makes for particularly sobering reading.

Any government must have an agenda on how to help those left behind. This chapter lays out some simple facts and analysis on the current mechanisms employed to help the poor, the efficacy of those mechanisms, and prospective reforms going forward.

Economic growth has historically been good for the poor, both directly because it raises incomes, and indirectly, because it gives the state resources to provide public services and social safety nets that the poor need (more than anyone else). The opportunities that growth creates also encourage individuals to invest in their own human capital. A recent study found strikingly that merely informing families in villages outside Bangalore that call centres were hiring educated women increased the likelihood that adolescent girls in those villages completed school.[1]

But growth needs to be complemented with active government support to improve the economic lives of the poor and vulnerable – about that there is no debate. The issue is *how best* to deploy fiscal resources in support of that goal. Effective anti-poverty programs ought to be:

(i) based on data rather than popular perception,

(ii) mindful of how policies shape – indeed frequently distort – the incentives that individuals and firms face, and

(iii) acutely conscious of the state's own limited implementation capacity to target and deliver services to the poor.

Price subsidies have formed an important part of the anti-poverty discourse in India and the government's own policy toolkit. Both the central and state governments subsidise the price of a wide range of products with the expressed intention of making them affordable for the poor. Rice, wheat, pulses, sugar, kerosene, LPG, naphtha, water, electricity, diesel, fertiliser, iron ore, railways – these are just a few of the commodities and services that the government subsidises. The estimated direct fiscal cost of this illustrative subset of subsidies is about ₹ 378,000 crore or about 4.24 percent of GDP. Just to give a sense of how large this amount is: ₹ 394,000 is roughly how much it would cost to raise the expenditure of every household to that of a household at the 35th percentile of the income distribution[2] (which is well above the poverty line of 21.9 percent).[3]

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[1] Jensen, Robert "*Do Labor Market Opportunities Affect Young Women's Work and Family Decisions? Experimental Evidence from India*" , 2012, *Quarterly Journal of Economics*, 127(2), p. 753-792.

[2] Economic Survey of India 2014-15, Chapter 3.

[3] Planning Commission, July 2013, reporting on the Tendulkar Commission (http://planningcommission.nic.in/news/pre_pov2307.pdf)

Prima facie, price subsidies do not appear to have had a transformative effect on the living standards of the poor, though they have helped poor households weather inflation and price volatility. A closer look at the price subsidy landscape reveals why they may not be the government's best weapon of choice in the fight against poverty.

3.2 Subsidising whom?

Table 3.1 offers a rough illustration – not an exhaustive compilation– of several price subsidies the government offers, and juxtaposes the intended beneficiaries with simple data computations that suggest how much of these benefits actually reach the poor. We make three observations based on the table.

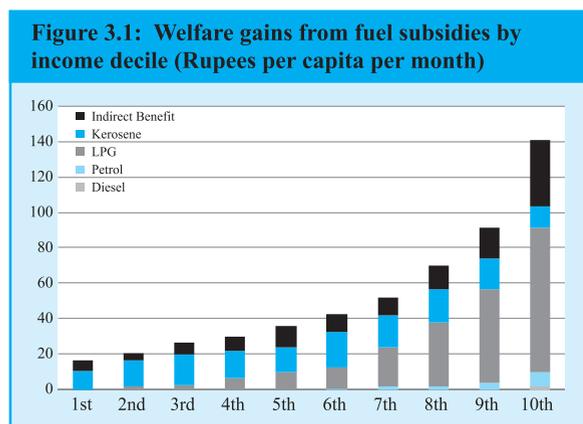### 3.2.1 Price subsidies are often regressive

By regressive, we mean that a rich household benefits more from the subsidy than a poor household. If one were to plot the distribution of welfare gains against income, the benefits of a regressive price subsidy would increase as we move up the income distribution.

For a start consider price subsidies in electricity. Note first that these subsidies can only benefit the (relatively wealthy) 67.2 percent of households that are electrified.[4] Second, note that even among

electrified households, richer households (predictably) use much more power: Table 3.1 shows that the bottom quintile of households consume on average 45 kWh per person per month (or 10 percent of the total subsidy amount) while the top quintile consumes 121 kWh (capturing 37 percent of power subsidies).

Fuel subsidies can be similarly regressive. Figure 3.1 graphs the benefits that fuel price subsidies confer on households of various income deciles.[5] The welfare gains for households in the second decile are about ₹ 20 per capita per month, while households in the top decile gain about ₹ 120. The story is similar when one just considers subsidies for Liquefied Petroleum Gas (LPG). From the table we note the striking fact that *the poorest 50 percent of households consume only 25 percent of LPG.* Figure 3.1 shows that the bottom 3 deciles gain very little from subsidised LPG – the monthly welfare gain from their LPG subsidies is less than ₹ 10 per capita – whereas the top decile gains significantly (their monthly welfare gain is close to ₹ 80 per capita).

Now move further down the fuel quality ladder and consider kerosene. At first glance, kerosene seems a good candidate for price subsidies as it is popularly conceived to be consumed mostly by the poor. Yet, as Table 3.1 shows, only 46 percent of total consumption of subsidised kerosene is by households with a Below Poverty Line (BPL) or Antyodaya Anna Yojana (AAY) card[6], and only 49 percent is consumed by households in the bottom 3 deciles of the expenditure distribution. Popular perception is thus partly correct: poor households are indeed more likely to use kerosene than rich households, but a majority (51 percent) of subsidised kerosene is consumed by the non-poor and almost 15 percent of subsidised kerosene is actually consumed by the relatively well-off (the richest 40 percent).

Figure 3.1: Welfare gains from fuel subsidies by income decile (Rupees per capita per month)

- Indirect Benefit
- Kerosene
- LPG
- Petrol
- Diesel

Source: **IMF working paper**

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4   Census of India (2011), Source of Lighting

5   Rahul Anand, David Coady, Adil Mohammad, Vimal Thakoor, and James P. Wal. "*The Fiscal and Welfare Impacts of Reforming Fuel Subsidies in India*". May 2013, IMF Working Paper.

6   AAY cards are intended for the poorest 5 percent of households.

Table 3.1: How much do subsidies benefit the poor?

Product	Producer subsidy	Consumer subsidy	Fiscal expen diture	Fiscal expen- diture (percent of 2011-12 GDP)	What share of benefits accrue to the poor?
Railways	N/A	Subsidised passenger fares	₹ 51,000	0.57	The bottom 80 percent of households constitute only 28.1 percent of total passenger through fare on railways
Liquefied petroleum gas	N/A	Subsidy (now via DBT)	₹ 23,746	0.26	The bottom 50 percent of households only consume 25 percent of LPG
Kerosene	N/A	Subsidy via PDS	₹ 20,415	0.23	41 percent of PDS kerosene allocation are lost as leakage, and only 46 percent of the remainder is consumed by poor households
Fertiliser & nitrogenous commodities	Firm and . nutrient specific subsidies to manufac-turersthe Import of urea regulated by government	Maximum Retail Price for urea is determined by the government	₹ 73,790	0.82	Urea and P&K manufacturers derive most economic benefit from the subsidy, since farmers, especially poor farmers, have elastic demand for fertiliser
Rice (paddy)	Price floor (minimum support price)	Subsidy via PDS	₹ 129,000	1.14	15 percent of PDS rice is lost as leakage. Households in the bottom 3 deciles consume 53 percent of the remaining 85 percent that reaches households
Wheat					54 percent of PDS wheat is lost as leakage. Households in the bottom 3 deciles consume 56 percent of the remaining 46 percent that reaches households
Pulses	Price floor (MSP)	Subsidy via PDS	₹ 158	0.002	The bottom 3 deciles consume 36 percent of subsidised pulses
Electricity	Subsidy	Capped below market price	₹ 32,300	0.36	Average monthly consumption of bottom quintile = 45 kWh vs top quintile = 121 kWh. Bottom quintile captures only 10percent of the total electricity subsidies, top quintile captures 37 percent of subsidy
Water	N/A	Subsidy	₹ 14,208	0.50	Most water subsidies are allocated to private taps, whereas 60 percent of poor households get their water from public taps
Sugar	Minimum price for sugar cane farmers, subsidy to mills	Subsidy via PDS	₹ 33,000	0.37	48 percent of PDS sugar is lost as leakage. Households in the bottom 3 deciles consume 44 percent of the remaining 52 percent that reaches households
Total			₹ 3,77,616	4.24	

All expenditure deciles are based on data from the household expenditure module of the 68th Round of the NSS (2011-12)
Railways – *www.ncaer.org/free-download.php?pID=111* , *p107 & NSS 68th round*
LPG – Computations from the 68th Round of the NSS (2011-12)
Kerosene – *Economic Survey of India 2014-15, Vol. I ,Chapter 3.*
Fertiliser – *Agricultural Input Survey, http://inputsurvey.dacnet.nic.in/nationaltable3.aspx*
Rice & wheat – *Economic Survey of India 2014-15,Vol. I, Chapter 3.*
Pulses – Computations from the 68th Round of the NSS (2011-12)
Water – Report by MIT and World Bank http://web.mit.edu/urbanupgrading/waterandsanitation/resources/pdf-files/WaterTariff-4.pdf , p2
Sugar – Department of Food & Public Distribution (http://dfpd.nic.in/fcamin/sugar/Notice1.pdf)

Subsidised water is almost as regressive as subsidised heat and light. Table 3.1 shows that a large fraction of price subsidies allocated to water utilities – by one estimate up to 85 percent[7] – are spent on subsidising private taps when 60 percent of poor households get their water from public taps.

It is not just commodity subsidies that are sometimes regressive; subsidised services can be as well. Passenger tariffs on railways are held artificially low – since 1993, the CPI has increased by over 4 times, whereas average passenger rates have not even doubled (from 16.7 paise per passenger-km in 1993-94 to 31.5 paise per passenger-km in 2013-14[8]; Figure 3.2). Controlled rail prices actually provide more benefits for wealthy households than poor households, since the bottom 80 percent of households constitute only 28.1 percent[9] of total originating passengers on non-suburban rail routes.

The exercise above illustrates the value of complementing conventional wisdom with hard data when forming opinions about the likely beneficiaries of subsidies.

3.2.2 Price subsidies can distort markets in ways that ultimately hurt the poor

In a market economy, prices play a key role in allocating scarce resources to different agents. Subsidies can distort the incentives of consumers and producers, and result in misallocation of resources across sectors and firms, which lowers aggregate productivity and often disproportionately hurts the poor and vulnerable[10].

Consider for example rice and wheat subsidies. The government provides both producer and consumer subsidies totalling about ₹ 125,000 crore. Wheat and rice are procured from farmers at guaranteed above-market minimum support prices (MSPs – ₹ 14/kg of wheat, ₹ 13.6/kg of rice).

High MSPs induce distortions, some of which ultimately hurt the poor. Here are two examples.

(a) Ramaswami, Seshadri and Subramanian (2014) describe how high MSPs result in farmers over-cultivating rice and wheat, which the Food Corporation of India then purchases and houses at great cost. High MSPs also encourage under-cultivation of non-MSP supported crops. The resultant supply-demand mismatch raises prices of non-MSP supported crops and makes them more volatile. This contributes to food price inflation that disproportionately hurts poor households who tend to have uncertain income streams and lack the assets to weather economic shocks.

(b) High MSPs and price subsidies for water together lead to water-intensive cultivation that causes water tables to drop, which hurts farmers, especially those without irrigation.

The railway passenger subsidies described in section 3.2.1 are not just regressive; they also induce the following distortions:

(a) loss-making passenger transit services mean that the railways cannot generate sufficient internal resources to finance capacity expansion investments;

(b) the high freight tariffs which cross-subsidise passenger fares has resulted in diversion of freight traffic to road transport. This entails not only financial and efficiency costs but also acute costs associated with emissions, traffic congestion, and road traffic accidents;

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[7] *Do Current Water Subsidies reach the poor?*, MIT and World Bank working paper *(http://web.mit.edu/urbanupgrading/waterandsanitation/resources/pdf-files/WaterTariff-4.pdf)*

[8] *Economic Survey of India 2015,* Volume 1, Chapter 6 (on Railways)

[9] www.ncaer.org/free-download.php?pID=111 , p107 & 68th Round of the NSS

[10] Hsieh, Chang-Tai and Klenow, Peter J, "*Misallocation and manufacturing TFP in China and India*", 2009,The Quarterly Journal of Economics 124(4), pp. 1403—1448.

(c) in order to cross-subsidise low passenger fares, freight tariffs are among the highest in the world (see Chapter 6 on Railways in this Volume). This reduces the competitiveness of Indian manufacturing and raises the cost of manufactured goods that all households, including the poor, consume.

Fertiliser subsidies illustrate another difficulty with using price subsidies as a core anti-poverty strategy. The true *economic incidence of a subsidy* depends on the relative elasticities of demand and supply, with the party *less* responsive to price changes benefiting *more* from a subsidy. The ultimate aim of subsidising fertiliser is to provide farmers with access to cheap fertilisers to incentivise usage and cultivation of high-yielding varieties. Yet because farmers' demand for fertiliser is likely to be more sensitive to prices[11] than fertiliser manufacturers' supply, the larger share of economic benefits from the price subsidy probably accrue to the fertiliser manufacturer and the richer farmer, not the intended beneficiary, the farmer.

Different subsidies may also interact to hurt the poor. For example, fertiliser manufacturers do not have an incentive to sell their product in geographically isolated regions. Since price controls mean that prices are similar everywhere, freight subsidies on railways have been introduced to incentivise manufacturers to supply their produce widely. But those subsidies are sometimes insufficient, since freight rates on Indian railways are among the highest in the world to cross-subsidise artificially low passenger fares. This is an example of how a mesh of well-meaning price controls distort incentives in a way that ultimately hurt poor households

The implementation of subsidies can be fiendishly complex, and are susceptible to the brutal logic of self-perpetuation. In the case of fertilisers, they are firm-specific and import-consignment specific, they vary by type of fertiliser, and some are on a fixed-quantity basis while others are variable. In the case of sugar, to protect sugar cane producers, high support prices are awarded; to offset this tax on mill owners, they are supported through subsidised loans and export subsidies; and then they are again taxed by placing restrictions on sales of molasses that are produced as a by-product.

The associated distortions make the total cost of subsidies much greater than the direct fiscal cost, and many of these distortions ultimately hurt those who are most vulnerable and have the least cushion to bear them.

3.2.3 Leakages seriously undermine the effectiveness of product subsidies

The Prime Minister recently stated that leakages in subsidies must be eliminated without reducing the subsidies themselves.

Price subsidies are often challenging for the state to implement because they offer large rent-seeking opportunities to black marketers. We use the term leakages to describe the subsidised goods that do not reach any households. Like the distortions emphasised above, leakages not only have the direct costs of wastage, but also the opportunity cost of how the government could otherwise have deployed those fiscal resources.

The stance of trying to rationalise subsidy leakages should not be seen as a strike against the poor, for three reasons. First, the regressive nature of many price subsidies reduce their effectiveness as anti-poverty strategies; second, reducing subsidy leakages gives the government the fiscal space required for higher-return social transfer programs without causing welfare losses; and, third, the same amount of benefit that households gain through subsidies can be directly transferred to the poor through lump-sum income transfers, avoiding the distortions that subsidies induce.

Converting all subsidies into direct benefit transfers is therefore a laudable goal of government policy. But developing the state capacity to implement the direct transfers to replace subsidies will take time

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[11] One estimate suggests that farmers' demand for fertiliser falls by nearly 6.4 percent for a 10 percent increase in fertiliser prices. Ravindra H. Dholakia and Majumdar Jagdip" *Estimation of Price Elasticity of Fertilizer Demand in India,*", 2006, Working Paper.

and should not be allowed to slow down the pace of reform. In the interim, is the goal of maintaining subsidies while cutting leakages achievable?

In what follows, we estimate leakages using data from the census and NSS. Our calculations suggest that leakages are large, and can – at least in the case of kerosene – likely be reduced without compromising household welfare.

3.3 THE CASE OF KEROSENE

Evenings in poor un-electrified households can be cold and dark. The central government thus subsidises kerosene to lower the cost of accessing this particular source of energy. Kerosene subsidies totaled ₹ 30,574 crores in 2013-14 and are expected to cost ₹ 28,382 crores this financial year.

We quantify leakages of PDS kerosene in different states using data from the household expenditure module of the 68th Round of the NSS (2011-12) and population data from the 2011 Census. PDS leakages are defined as the difference between total allocation of PDS kerosene and *actual household consumption*. Based on these data, we make 5 observations:

- *Leakages are large and universal:* Figure 3.2 plots the kerosene allocation per PDS user against the kerosene consumption per PDS user across states. The chart shows that PDS kerosene allocations significantly exceed consumption in nearly every state – that is to say, nearly all states show a large amount of PDS kerosene leakage.[12] In absolute terms, leakages are greatest in UP, West Bengal, Gujarat, and Maharashtra; in per capita terms, leakages are greatest in Haryana, Gujarat, and Punjab; and in percentage of actual allocations, they are greatest in the Northeastern states of Manipur, Sikkim, and Arunachal Pradesh.

- *Leakages increase with the size of PDS allocations:* Figure 3.3 shows that there is a positive relationship between leakages and allocations of PDS kerosene. This positive relationship remains in more formal analysis – a linear regression of leakages on allocations and controlling for states' level of economic development and corruption measures.

Figure 3.2: Need per PDS user relative to allocation per PDS user

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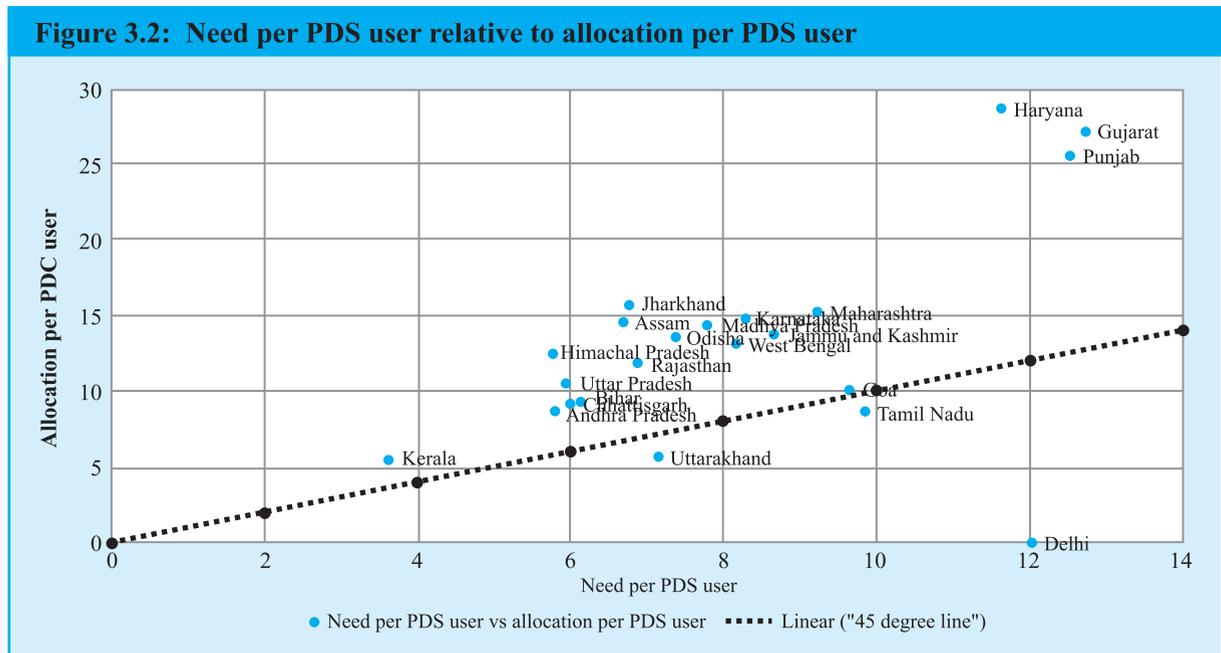
[12] There appear to be data problems with a few states such as Tamil Nadu and Delhi

Figure 3.3: Leakages of PDS kerosene vary with allocations
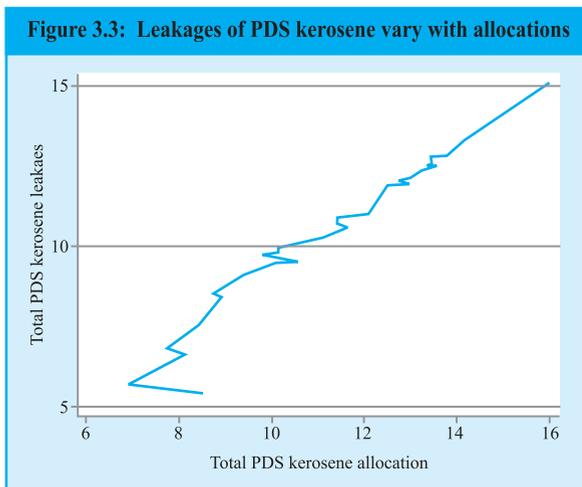
The regression results in Table 3.2 suggest that a 1 percent increase in PDS kerosene allocations are associated with a 1.1 percent increase in PDS leakages. In other words, if allocations are reduced, leakages may decrease by a more-than-proportionate amount. Put differently, in states that get more allocations, we see the greatest leakages and misappropriation of their allocations.

- **The poor consume only 46 percent of subsidised kerosene, so large PDS**

Table 3.2 : Relationship between allocations and leakages in the PDS

	All states	Excluding North eastern states	Only major states
Log (per capita PDS allocation)	1.389*** (0.000)	1.130*** (0.002)	1.227*** (0.007)
Log (GDP per capita)	-0.376 (0.308)	-0.565 (0.158)	-0.558 (0.174)
Measure of corruption	0.223 (0.169)	0.281 (0.121)	0.277 (0.134)
Observations	28	21	17
Adjusted R-squared	0.670	0.702	0.685

p-values in parenthesis* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 3.4: Excess kerosene allocation or user relative to the log of GDP per capita
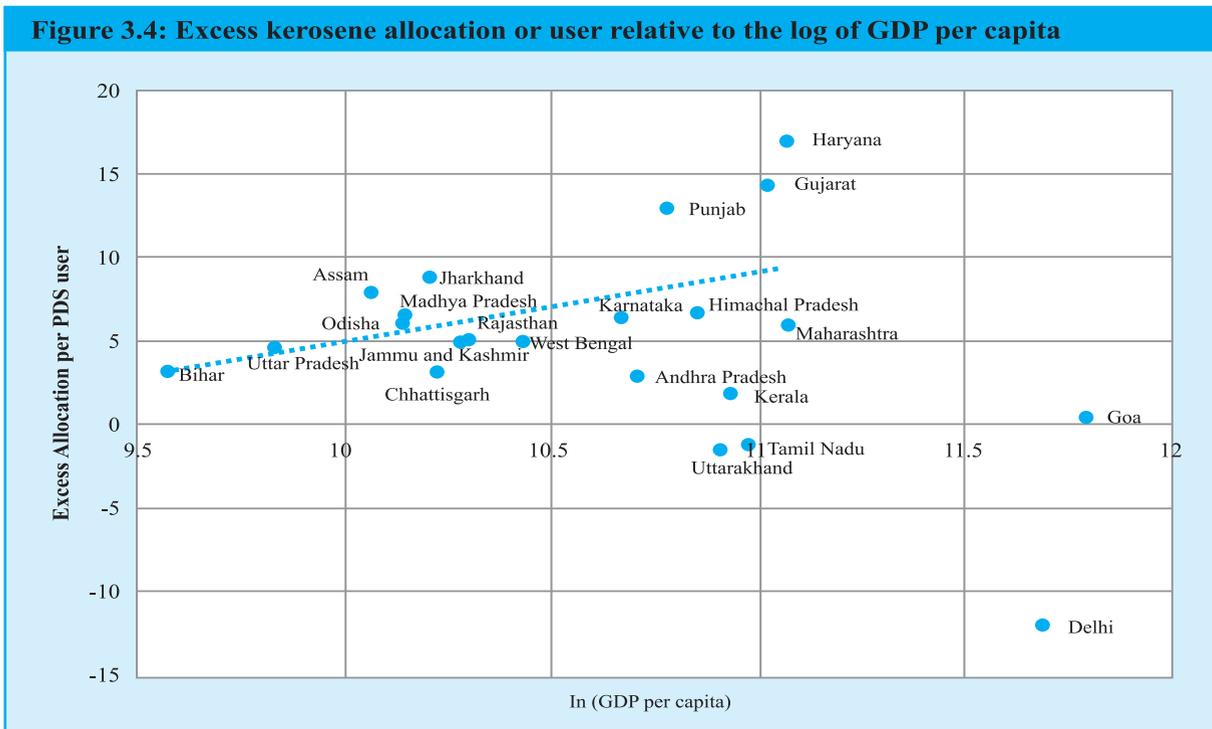
Table 3.3 : Income elasticity of kerosene (dependent variable is log (total kerosene consumption)			
	All states	**Excluding North eastern states**	**Only major states**
Log (GDP per capita)	-1.857*** (0.004)	-2.228*** (0.000)	-1.620*** (0.001)
Measure of corruption	0.0169 (0.963)	0.363* (0.080)	0.395** (0.048)
Observations	30	23	19
Adjusted R-squared	0.152	0.424	0.420

p-values in parenthesis* p < 0.10, ** p < 0.05, *** p <0.01

kerosene allocations – far in excess of actual consumption – are difficult to justify on equity grounds: Large allocations of subsidised kerosene are sometimes justified on the grounds that they are used as a source of lighting by poor households. While that is true, Figure 3.4 shows that PDS kerosene leakages are larger in richer states. Reducing allocations in these states – while allowing a buffer so that they are still significantly above *actual consumption levels* – is likely to affect wealthier states more. Moreover, the NSS micro data show that 46 percent of subsidised kerosene is consumed by households holding a BPL or AAY card, which is inconsistent with the popular perception that it is exclusively poor households who use kerosene.

- *Kerosene is an inferior good:* Kerosene consumption tends to decline as incomes rise. As households get richer, they consume less of it because they substitute to cleaner, higher quality but more expensive fuels like LPG. Table 3.3 demonstrates this intuition by estimating a series of linear regressions of total kerosene per capita on a state's per capita GDP. The results are shown for different samples of states to check for robustness. For every 1 percent increase in a state's income, total kerosene consumption tends to decline by more than 1.5 percent. Income growth between 2011-12 (68th Round of NSSO) and the current year can thus be expected to have reduced household demand for kerosene rather than increase it. The policy implication is that kerosene allocations should 'naturally' decline over time.

- *PDS allocations exceed total (i.e. PDS + non-PDS) consumption of kerosene:* Table 3.4 suggests that in fact PDS kerosene allocations are more than even *the sum of PDS and non-PDS kerosene consumption*. 1.8 million kiloLitres of allocated subsidised kerosene remains unaccounted for – that is, unconsumed by households—and may be indicative of illicit activities such as adulteration of petrol and diesel fuels.

Table 3.4 also shows the fiscal cost of these leakages. Using a per unit subsidy rate of ₹ 33.9 per litre (columns 3 and 4), we calculate that kerosene consumption of states can be met even if PDS allocations of subsidised kerosene are reduced by 41 percent from its current level of approximately 9 million kilolitres to about 5.3 million kilolitres. The fiscal cost of these leakages is about ₹ 10,000 crore, and indicates that the opportunity cost of wasting these fiscal resources is indeed significant.

Table 3.4 : Savings from Rationalising Allocations

States	Total PDS allocation (kiloLitres)	Total PDS consumption as per aggregate NSS data 2011-12 (kL)	Fraction of consumption by poor households (%)	Excess PDS allocation (kL)	Leakage (%)	Total PDS consumption of all ration card holders as per NSS micro data 2011-12 (kl)	Fiscal cost of excess PDS allocation (₹ crores)
All-India	**9,028,806**	**5,349,541**	46	**3,679,265**	41	**4,776,000**	**10,044**
Uttar Pradesh	1,590,000	897,104	28	692,896	44	771,600	**1,892**
West Bengal	963,528	598,645	33	364,883	38	548,400	**996**
Gujarat	673,416	316,528	45	356,888	53	296,400	**974**
Maharashtra	730,464	442,258	37	288,206	39	399,600	**787**
Madhya Pradesh	625,668	339,104	50	286,564	46	291,600	**782**
Bihar	814,068	537,918	49	276,150	34	453,600	**754**
Karnataka	522,888	294,351	79	228,537	44	270,000	**624**
Rajasthan	508,764	294,658	30	214,106	42	262,800	**585**
Odisha	398,988	217,362	60	181,626	46	176,400	**496**
Assam	327,966	150,700	50	177,266	54	132,000	**484**
Andhra Pradesh	465,996	310,257	96	155,739	33	298,800	**425**
Jharkhand	268,704	116,363	50	152,341	57	91,440	**416**
Chattisgarh	180,072	118,196	69	61,876	34	105,360	**169**
Haryana	91,260	37,113	83	54,147	59	36,840	**148**
Punjab	90,132	44,260	50	45,872	51	38,640	**125**
Kerala	120,192	79,595	35	40,597	34	78,960	**111**
Jammu and Kashmir	90,072	56,831	30	33,241	37	43,440	**91**
Manipur	24,967	3,893	35	21,074	84	2,556	**58**
Meghalaya	25,943	7,827	62	18,116	70	7,092	**49**
Nagaland	17,100	579	7	16,521	97	310	**45**
Tripura	39,179	25,273	37	13,906	35	24,360	**38**
Himachal Pradesh	24,660	11,394	36	13,266	54	10,560	**36**
Arunachal Pradesh	11,479	2,766	21	8,713	76	2,016	**24**
Sikkim	6,348	1,282	67	5,066	80	1,142	**14**
Mizoram	7,800	3,216	36	4,584	59	2,868	**13**
A & N islands	6,912	3,100	12	3,812	55	2,832	**10**
Puducherry	4,440	2,653	76	1,787	40	2,508	**5**
Dadra & N Haveli	2,280	1,326	41	954	42	1,308	**3**
Chandigarh	3,528	2,764	52	764	22	2,208	**2**
Lakshwadeep	1,008	699	16	309	31	583	**1**
Goa	5,244	5,016	11	228	4	4,884	**1**
Daman & Diu	876	920	12	(44)	(5)	533	**(0)**
Delhi	-	4,704	51	(4,704)	-	3,504	**(13)**
Uttarakhand	36,168	45,478	31	(9,310)	(26)	42,360	**(25)**
Tamil Nadu	348,696	396,244	39	(47,548)	(14)	366,000	**(130)**

Notes: a)   The per litre subsidy cost of ₹ 33.9 per litre for 2013-14 was used in the calculations. This data was provided by the Policy and Analysis Cell of the Petroleum Ministry.

          b)   The 68th round of the NSS (2011-12) reports PDS consumption of kerosene for surveyed households. We scale household consumption by each household's multiplier which indicates how representative that household is of the overall sample.

Table 3.5 : Quantifying and estimating the fiscal cost of PDS rice leakages

States	Total PDS offtake (tonnes)	Total PDS consumption as per NSS 2011-12 (tonnes)	Leakage (tonnes)	Leakages (%)	Fiscal cost of excess PDS allocation (₹ crores)
All-India	**24,325,843**	**19,188,000**	**3,639,478.89**	**15**	**5,892**
All-India ex NFSA	**17,717,053**	**13,881,541**	**3,835,512**	**22**	**6,210**
Uttar Pradesh	2,824,555	1,635,600	1,188,955	42	1,925
Maharashtra	1,432,041	892,320	539,721	38	874
Andhra Pradesh	3,031,942	2,960,400	71,542	2	116
West Bengal	1,222,344	798,480	423,864	35	686
Karnataka	1,925,849	1,428,000	497,849	26	806
Jharkhand	1,000,369	568,800	431,569	43	699
Assam	1,229,041	895,200	333,841	27	540
Bihar	1,630,176	1,368,000	262,176	16	424
Kerala	1,155,661	922,800	232,861	20	377
Tamil Nadu	3,532,541	3,156,000	376,541	11	610
Gujarat	305,644	154,800	150,844	49	244
Manipur	124,444	5,268	119,176	96	193
Delhi	129,384	18,672	110,712	86	179
Odisha	1,685,706	1,536,000	149,706	9	242
Nagaland	106,512	9,780	96,732	91	157
Meghalaya	155,719	90,120	65,599	42	106
Tripura	256,990	225,600	31,390	12	51
Himachal Pradesh	190,807	151,200	39,607	21	64
Arunachal Pradesh	75,963	50,760	25,203	33	41
Goa	51,562	28,560	23,002	45	37
Sikkim	42,236	22,560	19,676	47	32
Puducherry	41,209	36,120	5,089	12	8
Uttarakhand	190,977	170,400	20,577	11	33
Dadra & N Haveli	9,219	5,340	3,879	42	6
Chandigarh	3,353	917	2,436	73	4
A & N islands	10,873	19,200	(8,327) -	77-	13
Daman & Diu	3,041	125	2,916	96	5
Lakshwadeep	4,053	4,344	(291) -	7-	0
Punjab	0	534	(534)	--	1
Haryana	0	2,436	(2,436)	--	4
Rajasthan	0	4,380	(4,380)	--	7
Mizoram	58,378	67,560	(9,182)	167	15
Madhya Pradesh	404,878	316,800	88,078	22	143
Jammu and Kashmir	522,074	505,200	16,874	3	27
Chattisgarh	892,302	1,123,200	(230,898) -	26-	374

Table 3.6 : Quantifying and estimating the fiscal cost of leakages in PDS wheat

States	Total PDS offtake (tonnes)	Total PDS consumption as per NSS 2011-12 (tonnes)	Leakage (tonnes)	Leakages (%)	Fiscal cost of excess PDS allocation (₹ crores)
All-India	**18,776,070**	**8,592,000**	**10,184,070**	**54**	**12,598**
All-India ex NFSA	**13,350,441**	**5,605,725**	**7,744,716**	**58**	**9,580**
Uttar Pradesh	3,820,778	1,380,000	3,013,326	69	3,727
Maharashtra	2,107,204	1,088,400	1,018,804	48	1,260
West Bengal	2,058,861	552,000	1,506,861	73	1,864
Gujarat	937,155	312,000	625,155	67	773
Rajasthan	2,078,693	870,000	1,208,693	58	1,495
Madhya Pradesh	2,248,539	1,094,400	1,154,139	51	1,428
Bihar	1,127,174	1,015,200	111,974	10	139
Punjab	686,355	264,000	422,355	62	522
Haryana	586,431	313,200	273,231	47	338
Delhi	415,911	74,760	341,151	82	422
Assam	363,710	12,960	350,750	96	434
Odisha	372,299	88,920	283,379	76	351
Chattisgarh	192,892	116,520	76,372	40	94
Jharkhand	15,669	7,428	8,241	53	10
Uttarakhand	265,889	166,800	99,089	37	123
Kerala	273,146	150,000	123,146	45	152
Himachal Pradesh	321,856	235,200	86,656	27	107
Karnataka	308,763	243,600	65,163	21	81
Nagaland	33,582	109	33,473	100	41
Manipur	20,440	3	20,437	100	25
Tripura	18,391	4,152	14,239	77	18
Meghalaya	26,971	358	26,613	99	33
Chandigarh	30,863	8,820	22,043	71	27
A & N islands	5,153	3,072	2,081	40	3
Mizoram	7,855	754	7,101	90	9
Goa	8,859	3,984	4,875	55	6
Arunachal Pradesh	7,626	686	6,940	91	9
Daman & Diu	1,628	40	1,588	98	2
Sikkim	2,700	71	2,629	97	3
Puducherry	6,607	9,276	(2,669)	(40)-	3
Dadra & N Haveli	1,028	174	854	83	1
Lakshwadeep	-	42	(42)	-	-
Andhra Pradesh	33,532	40,680	(7,148)	(21)-	9
Jammu and Kashmir	221,411	187,200	34,211	15	42
Tamil Nadu	-	352,800	(352,800)	--	436

Notes on Tables 3.5 and 3.6:

a) **Excess allocations are computed as the difference between PDS allocation and PDS consumption.**

b) **The fiscal cost is calculated by multiplying the per quintal subsidy (₹ 1237 for wheat and ₹ 1619 for rice) by the total excess allocation.**

c) **Our proposed allocation is calculated by scaling up the 2011-12 PDS consumption as per NSS by 25 percent**

d) **Savings due to our proposal is the difference between the PDS allocation and our proposed allocation.**

e) **Fiscal savings is again calculated by multiplying the total savings (in tonnes of grain) by the per quintal subsidy.**

3.4 The Case of Food

A similar situation prevails in the distribution of subsidised grain via the PDS. Table 3.5 and 3.6 show that leakages are large and present in most states, and that they are significantly larger for wheat (54 percent) than for rice (15 percent). The fiscal cost of these leakages is also large – about ₹ 5800 Cr for PDS rice and ₹ 12,600 Cr for PDS wheat. Recent academic research on the subject of PDS leakages has found that leakages are falling though still unacceptably high[12]. There is also suggestive evidence that leakages are larger in the APL rather than the BPL category[13]. We note that any proposal to reduce food subsidy leakages has to bear in mind the provisions of the National Food Security Act, which provides for a total of 5 kg of subsidised grain (rice, wheat and/or millet at ₹ 3, 2 and 1 per kg, respectively) to households as well as cash benefits for pregnant women and hot meals for young children.

Like for kerosene, leakages are also larger in states that have larger allocations (Table 3.7), and consumption of grains tends to decrease as households get wealthier (Table 3.8).

Table 3.7 : Relationship between rice allocations and PDS leakages	All states	Excluding North eastern states	Only major states
Log (per capita PDS allocation)	0.972***	0.736***	0.913***
	(0.000)	(0.010)	(0.015)
Log (GDP per capita)	0.226	0.332	0.252
	(0.382)	(0.139)	(0.340)
Measure of corruption	-0.172	-0.225	-0.270
	(0.262)	(0.212)	(0.186)
Observations	27	20	17
Adjusted R-squared	0.428	0.292	0.279

Dependent variable is Log(per capita excess PDS allocations)p-values in parenthesis* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3.8 : Income elasticity for rice	Log(consumption)	Log(consumption)	Log(consumption)	Log(consumption)
Log (per capita PDS allocation)	-0.142***	-0.137***	0.106***	-0.123***
	(0.000)	(0.000)	(0.000)	(0.000)
District fixed effects	No	Yes	Yes	Yes
State fixed effects	No	Yes	Yes	Yes
Observations	30835	3085	18581	1703
Adjusted R-squared	0.019	0.518	0.516	0.628

p-values in parenthesis* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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[12] Ashok Gulati and Shweta Saini "*Leakages from Public Distribution System (PDS) and the Way Forward",* 2015, ICRIER working paper

[13] Jean Dreze and Reetika Khera "*Understanding Leakages in the Public Distribution System",* 2015, Economic and Political Weekly, February 14.

3.5 THE POSSIBILITIES OFFERED BY CASH TRANSFERS

Technology is increasingly affording better means for the government to improve the economic lives of the poor. In particular, technologies that enable the state to better target and transfer financial resources to households expand the set of anti-poverty tools the government has in its armoury. These technological innovations have renewed political, policy and academic interest in the potential of direct cash transfers to help the poor. Recent experimental evidence documents that unconditional cash transfers – if targeted well – can boost household consumption and asset ownership and reduce food security problems for the ultra-poor.[14]

Cash transfers can also augment the effectiveness of existing anti-poverty programs. By reducing the number of government departments involved in the distribution process, opportunities for leakage are curtailed. A recent study[15] reported evidence from Andhra Pradesh where MGNREGA and Social Security payments were paid through Aadhaar-linked bank accounts. Households received payments on average 10 days faster with the new Aadhaar-linked direct benefits transfer system, and leakages reduced by 10.8 percentage points. The value of the fiscal savings – due to lower leakages – were 8 times greater than the cost of implementing the program. This shows the high returns to public investments in the state capacity required to deliver secure payments.

In addition to net fiscal savings, income transfers can compensate consumers and producers for exactly the welfare benefits they derive from price subsidies without distorting their incentives in the way described in Section II above.

3.6 THE JAM NUMBER TRINITY SOLUTION

Eliminating or phasing down subsidies is neither feasible nor desirable unless accompanied by other forms of support to cushion the poor and vulnerable and enable them to achieve their economic aspirations. The JAM Number Trinity – *Jan Dhan Yojana*, *Aadhaar* and *Mobile numbers* – allows the state to offer this support to poor households in a targeted and less distortive way.

As of December 2014, over 720 million citizens had been allocated an Aadhaar card. These enrolments are increasing at a rate of 20 million per month and by December 2015, the total number of Aadhaar enrolments in the country is expected to exceed 1 billion. Linking the Aadhaar number to an active bank account is key to implementing income transfers. To this effect, the government had seeded over 100 million bank accounts with registered Aadhaar numbers by December 2014. With the introduction of Jan Dhan Yojana, the number of bank accounts is expected to increase further and offering greater opportunities to target and transfer financial resources to the poor. Indeed, the government is already attempting this transition in certain areas by paying cooking gas subsidies directly via Direct Benefit Transfer into the bank accounts of 9.75 crore recipients.

We describe two alternative financial delivery mechanisms below:

- *Mobile Money* – With over 900 million cell phone users and close to 600 million unique users, mobile money offers a complementary mechanism of delivering direct benefits to a large proportion of the population.[16] Moreover, 370 million

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[14] Johannes Haushofer & Jeremy Shapiro (2013), *Household Response to Income Changes: Evidence from an Unconditional Cash Transfer Program in Kenya*, Working Paper.

[15] A group of 158 sub-districts implemented this new payment system, but were enrolled in the program in a random order, which enabled the researchers to carefully examine the impact of enrolment on leakages of MGNREGA payments. Karthik Muralidharan, Paul Niehaus & Sandip Sukhtankar (2014), *Building State Capacity: Evidence from Biometric Smartcards in India*, Working Paper.

[16] *http://www.trai.gov.in/WriteReadData/WhatsNew/Documents/Presspercent20Release-TSD-Mar,14.pdf*

of these cell phone users are based in rural areas, and this number is increasing at a rate of 2.82 million every month. Mobile money therefore offers a very viable alternative to meet the challenge of last mile connectivity. Given that Aadhaar registrations include the mobile number of a customer, the operational bottlenecks required to connect mobile numbers with unique identification codes is also small. With several cell phone operators reportedly applying for a payment bank license in February 2015[17], mobile money platforms offer tremendous opportunities to direct Aadhaar based transfers.

• **Post Offices** – India has the largest Postal Network in the world with over 1,55,015 Post Offices of which (89.76 percent) are in the rural areas.[18] Similar to the mobile money framework, the Post Office (either as payment transmitter or a regular Bank) can seamlessly fit into the Aadhaar linked benefits-transfer architecture by applying

for an IFSC code which will allow post offices to start seeding Aadhaar linked accounts. The post office network also enjoys a long-standing reputation of using its deep network to serve many geographically isolated consumers in the country.

If the JAM Number Trinity can be seamlessly linked, and all subsidies rolled into one or a few monthly transfers, real progress in terms of direct income support to the poor may finally be possible. The heady prospect for the Indian economy is that, with strong investments in state capacity, that *Nirvana* today seems within reach. It will be a *Nirvana* for two reasons: the poor will be protected and provided for; and many prices in India will be liberated to perform their role of efficiently allocating resources in the economy and boosting long run growth. Even as it focuses on second generation and third generation reforms in factor markets, India will then be able to complete the basic first generation of economic reforms.

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[17] *http://articles.economictimes.indiatimes.com/2015-02-03/news/58751845_1_payments-banks-small-banks-shinjini-kumar*

[18] *http://www.indiapost.gov.in/our_network.aspx.*