Can Contract Farming Double Farmers' Income?

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Following its mandate to double farmers' income by 2022, the central government has enacted a separate model contract farming act in 2018 based on the perception that contract farming is one of the several pathways for doubling farm income. However, findings from primary surveys in Moga, Tarn Taran and Amritsar districts in Punjab, reveal that despite bringing in new crops, technologies and markets for farmers, contract farming excludes the smallholder farmers. Unless such arrangements can protect the interests of the smallholders who constitute almost four-fifth of India's farming population, doubling farm income will remain elusive.

It is well documented that the agricultural reforms of the mid-1960s, which provided a major breakthrough in food crop, particularly wheat production in the country could not generate ubiquitous increase in farmers' incomes and welfare. Arguably, India's adoption of the new economic policy and reforms since early 1990s has further widened the gap between agricultural and non-agricultural sector incomes (Chand 2016, 2017); the country has been witnessing agrarian crises of varying form and extent across different regions, with farmer suicides manifesting the extreme form of the crises (Assadi 2006; Mishra 2009). Moreover, it is observed that low and highly fluctuating farm incomes, in many cases, force farmers out of agriculture altogether.

On the other hand, the recent decade has simultaneously witnessed a focal shift of government policy towards agricultural marketing reforms over mere enhancement of production. The need to bring reforms in agricultural marketing emanates from the traditional marketing channels being inefficient, fragmented with intermediation of middlemen, suffering from poor price discovery, insufficient infrastructure, and policy distortions, among other things, which act as deterrents for the enhancement of farmers' incomes (Chand 2012). It is argued that bringing reforms in agricultural markets will also enable farmers to augment their income by diversifying into high value agriculture (Singla 2017; Singh 2018). While agriculture market reform initiatives are predominated by the model Agricultural Produce Marketing Committee (APMC) Act of 2003, and its subsequent variants, such as the model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017, recently, the government has also floated a separate model Contract Farming Act, 2018 to facilitate contractual arrangements directly between the buyers and producers.

The essence of arrangements such as contract farming (CF) is to ensure buyers' (agro-processors/exporters/organised retail or wholesale, etc) timely purchase of a predetermined quantity and quality of a produce from the farmers at a predetermined price (Eaton and Shepherd 2001; Singh 2002; Bellemare 2012; Sharma 2016). Under this set-up while buyers have substantial control over the supply of the produce in terms of quantity, quality as well as prices/costs, the farmers also get an assured market for their produce (Singh 2005; Tripathi et al 2005). CF, therefore, is perceived as a panacea for many traditional ills such as lack of market connectivity, long chain of market intermediaries, ignorance about the buyer demands, etc (GOI 2017). While on the other hand, it is viewed as an institutional solution to some of the problems faced by the farmers such as inadequate technology, lack of access to

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factor markets and product market, and/or lack of incentives for diversification towards high value crops (Swain 2018). Given this, can CF emerge as one of the several pathways in achieving the union government's ambitious declaration of doubling farmers' income by 2022?

The current paper tries to explore this question by looking at CF arrangements of two firms—Paras Spices Private Limited (PSPL) and Rana Sugars Limited (RSL), which are into contract production and procurement of chicory and sugar beet from farmers in Punjab. The analyses compare the socio-economic background of these farmers to those without contracts, who are predominantly cultivating the minimum support price (MSP)-driven wheat; work out the costs and returns of the crops under contract and compare these with that of wheat; and finally examine the various factors determining farmers' participation in such contractual practices. The paper also explores the limitations of CF and based on these makes policy recommendations for leveraging the potential benefits of the CF mechanisms.

Data and Methodology

The data comes from a primary survey of 400 farmers by the authors in three districts in Punjab, namely, Moga, Tarn Taran and Amritsar, in 2016. A sample of 200 contract farmers with 100 each for chicory and sugar beet was selected through stratified random sampling from the lists of the farmers obtained from the contracting firms. These lists included the names and addresses of the farmers, the area (hectares) under contract farming and the variety of the vegetables grown. The district(s) with the maximum share in the total area under CF arrangements of each of the firms were selected. By this rationale of selection, Moga district was chosen for studying chicory CF of PSPL; and Tarn Taran and Amritsar for examining sugar beet CF for RSL. Again, the contract farmers' population obtained from the lists was divided into various farm-size categories comparable to the official farm-size classification of the Department of Agriculture, Punjab. Samples of farmers were randomly selected from each of these strata.

Another sample of 200 farmers growing traditional wheat crop in the vicinity of the contract farmers (henceforth, non-contract farmers) were selected from the three districts through the stratified random sampling. Thus, the sample comprised of 200 contract and 200 non-contract farmers, largely chosen through stratified sampling.

Profile of the Contracting Firms

RSL came into existence in 1992 as a joint venture with Punjab Agro Industries Corporation Ltd, which subsequently diversified into sugar manufacturing by setting up its first unit in the Amritsar district of Punjab. In 2012, it started CF of sugar beet with about 1,500 farmers. Presently, it has about 3,000 farmers under sugar beet contracts operating on 9,000 acres of land. On the other hand, PSPL initially forayed into the business of spices in 1985 and later on, diversified its portfolio by venturing into chicory CF. PSPL has contracted 200 farmers across 450 acres of land.

Both the firms work with the farmers through advance written contracts that specify the quality norms and prices to be paid after harvesting of the crops. During the surveys, RSL reported providing seeds and fertilisers to the farmers at subsidised rates, which are 75% and 25% lower than the market prices, respectively, while PSPL reported providing subsidised seeds only. RSL also extended the facility of sugar beet harvester. Both firms provided training and extension advice on the farming practices of the new crops to the contracted farmers. RSL also reported facilitating loans up to a maximum limit of ₹1,00,000 at the rate of ₹20,000 per acre through the IDBI bank.

There is no alternative market for the contracted crops in the state, so the farmers depend entirely on the firms for selling their produce. It is mentioned in RSL's contact that in case of any default by the firm and or any crop failure, the firm will be paying an amount equivalent to the prevailing MSP of wheat to those contract farmers with an average sugar beet yield of 20 quintal/acre. On the other hand, if a farmer does not sell 85% of the produce to the firm, then he has to pay a penalty equivalent to 10% of the value of the crop. Both the firms ensure that the farmers bring the produce within 24 hours of harvesting, as chicory starts shrinking after 24 hours making it difficult to be cut into pieces, while for sugar beet, the sugar content starts declining with time. However, farmers are usually paid with a delay which varies from a week to a month from the time of procurement. While PSPL makes payments through cheque within one week after procuring the produce, it takes around one month in the case of RSL, which pays an amount net of all input costs either in cash or directly to the farmers' bank accounts. The main features of the contracting arrangement executed by the two firms are summarised in Table 1.

Table 1: Profile of the Contracting Firms Studied

	Rana Sugars Limited (RSL)	Paras Spices Pvt Ltd (PSPL)
Year of establishment	1992	1985
Crop under contract	Sugar beet	Chicory
Type of contract	Written	Written
Language of contract	Punjabi	English
Criteria for choosing farms and/or areas for contracts	All over Punjab, but more preference to the areas in the vicinity of the processing plant	Areas within the circumference of 40–50 sq km from the firm and preferably areas of sandy loam soil
Inputs supplied	Seeds and fertilisers	Seeds
Price	₹170/quintal	₹340/quintal
Mode of payment	Both cash and direct payment to farmers' accounts	Cheque payments since 2013
Time of payment	Within a month of procurement	Within a week of procurement
Price fixation	Predetermined	Predetermined
Technical guidance	Free of cost	Free of cost
Compensation in the event of crop failure	Till now, no incidence of crop failure	In 2012, due to heavy rain all crops were destroyed, but the firm paid the farmers
Advance payments/loans	Loan @ ₹20,000/acre with a maximum limit of ₹1,00,000 through the IDBI bank	Firm provides credit to buy inputs to only known farmers

Source: Authors' interviews with firm /company officials.

Characteristics of the Sample Farmers

A firm may select a farmer on account of the associated economies of scale, while a farmer may self-select to participate in contractual arrangements with the firms due to the perceived benefits. It is pertinent to understand these factors or differences that differentiate a farmer participating in CF from one who does not, particularly in terms of the inclusion of smallholders in such contractual arrangements. Various observable demographic and farm characteristics are found to be the determinants for the differentiation between contract and non-contract farmers (Sharma 2016).

A brief socio-economic background of the farmers operating under CF and non-CF is given in Table 2. It is apparent from the table that the participants of CF are significantly different from the non-participants in terms of the average size of operational holdings, the ownership of farm equipment and average number of education years. In fact, a key driver of the difference in the size of operational holdings is the land leasing behaviour of the CF and non-CF farmers. The percentage of leased-in land in operational holding varies between 55% to 69% for the contract farmers as against only 29% to 39% for non-contract farmers, with the average size of operational landholding being 24 and 26 acres for sugar beet and chicory respectively, and only about 12 acres for wheat. Further, 17% and 22% of the operated area are allocated to the contract crops by farmers working with PSPL and RSL respectively.

Corroborating these findings, Table 3 shows that the proportion of small farmers participating in CF in the studied sample, is much lower than the overall share of smallholders in the farming population of the state in general. In RSL, 76% of the contracted farmers and 90% in PSPL are medium and large farmers, with the participation of small and marginal farmers varying between 10% to 24% in the chosen sample. Whereas the proportion of small and marginal farmers ranges between 28% to 32% under non-contract farming, which is comparable to the proportion of this farm-size category in the farming population of the state.

Table 2: Characteristics of Contract and Non-contract Farmers by Location

Socio-economic Variables	Moga			Tarn Taran and Amritsar		
	Sugar Beet Contract Farmers (RSL)	Wheat Non-contract Farmers	Test of Difference	Chicory Contract Farmers (RSL)	Wheat Non-contract Farmers	Test of Difference
Average land owned (acres)	11.61	8.5	1.63	8.1	7.8	0.24
Average operational holding (acres)	24.36	11.9	2.38***	25.7	12.3	4.39***
Average leased-in land (acres)	13.4 (55)	3.4 (29)	2.08**	17.6 (69)	4.8 (39)	4.60***
Average area under contract (acres)	5.3 (22)	–	–	4.4 (17)	–	–
Average number of years of association with the firm	3	–	–	5	–	–
Average number of farm implements	4	3	3.72***	5	3	4.74***
Average number of years in education	11	9	3.49***	8	8	-0.74
Average age (years)	43	45	-0.80	47	49	-0.64
Average family size	5	6	-0.67	6	5	0.51
Average allied farm income (₹/month)	6,156.7	5,480	0.26	8,140	3,450	1.71*
Average non-farm income (₹/month)	10,080	5,240	1.44	4,660	2,430	1.22

***, ** and * implies significant at 1%, 5% and 10% level respectively.
Figures in parentheses indicate % of leased-in land in operational landholding.
Source: Field survey (2016).

Table 3: Distribution of Contracted and Non-contracted Farmers by Farm Size

Farm-size Categories	Moga		Tarn Taran and Amritsar	
	Sugar Beet Contract Farmers (RSL)	Wheat Non-contract Farmers	Chicory Contract Farmers (PSPL)	Wheat Non-contract Farmers
Marginal (≤ 2.5 acres)	-	4 (8)	-	7 (14)
Small (> 2.5 to ≤ 5 acres)	3 (6)	10 (20)	-	9 (18)
Semi-medium (> 5 to ≤ 10 acres)	9 (18)	18 (36)	5 (10)	16 (32)
Medium (> 10 to ≤ 25 acres)	27 (54)	14 (4)	26 (52)	13 (26)
Large (> 25 acres)	11 (22)	4 (8)	19 (38)	5 (10)

Source: Field survey (2016).

Comparing Costs and Returns

To determine whether CF is beneficial to the farmers, the authors compared the gross and net returns from CF and non-CF across the study locations. The cost of production of the contracted crops is estimated to be almost twice as high as that of wheat. Again, due to the high productivity and resulting bulkiness of sugar beet and chicory than the wheat crop, the marketing incidences are much higher for contract farmers than that for non-contract farmers. And as the contract farmers reported delivering the vegetables at the doorsteps of the firms using their own transport, they have to incur the marketing costs which are 3.5 to 7 times higher than that for marketing wheat. Non-contract farmers, on the other hand, can sell the wheat crop in their village or nearby market yards.

The gross returns, estimated as the value of output per acre, is two to three times higher for the contracted sugar beet and chicory crops vis-à-vis wheat, respectively. The net returns, obtained by subtracting the total costs (production plus marketing costs) from the gross returns, are also more than double for the contract farmers than that for non-contract farmers. Corresponding evidences were obtained during conversations with the farmers on fields, who reported that three acres of chicory could give returns equal to about five acres of wheat. While Pathak et al (2014) in Rajasthan found the sugar beet crop to be more profitable than traditional rabi crops like wheat and mustard.

Determinants of Farmers' Participation

If contract farmers tend to be more skilled than non-contract farmers, then they would have higher income regardless of whether they participated in the CF scheme or not. In this case, participation will be affected by unobservable characteristics in addition to the effect of contracting, thus overestimating the effect of contracting. To cure this problem of sample selection bias, treatment effect model (also called as Heckman selection correction model) is used to determine the drivers of participation and its impact on the farm income. The two-step regression model uses a PROBIT model of participation to calculate the inverse Mills ratio, which is then included as a regressor in the income model (Puhani 2000; Miyata et al 2009). This method is implemented as a maximum likelihood estimation as it estimates all

the parameters of both models simultaneously. The equations for the analysis are:

$$Y_i = \alpha + \beta X_i + \mu C_i + \mu_i \quad ...(1)$$

$$C_i^* = \gamma_1 + \gamma_2 Z_i + e_i \quad ...(2)$$

$$C_i = 1 \text{ if } C_i^* > 0, \text{ otherwise } C_i = 0$$

where, Y_i is the gross revenue of the i^{th} farmer, C_i is a dummy variable taking the value '1' if the farmer participates in a contract with a contracting company, and 'o' otherwise, Xi is a vector of the variables believed to affect the gross revenue and μ_i is a zero mean random variable; while β measures the impact of contracting on gross income.

An ordinary least square (OLS) estimate of equation (1) is likely to be biased, because of the effects of unobservable factors. Thus, e_i (which contains within it the random unobservable factors) will be correlated with C_i. To correct for selectivity bias, equation (2) (PROBIT) is estimated with a contract/independent farmer as a binary dependent variable (C_i) and a set of explanatory variables Z_i. Variables in Z_i will overlap with variables in X_i. Identification requires that there should be at least one variable in Z_i that is not in X_i. Then, predicted values (also known as the inverse Mills ratio) from equation (2) can be used as an instrument (of C_i) in equation (1) (Greene 2003).

Table 4: Cost and Returns from Contract and Non-contract Farming by Locations

	Moga		Tarn Taran and Amritsar	
	Sugar Beet Contract Farmers (RSL)	Wheat Non-contract Farmers	Chicory Contract Farmers (PSPL)	Wheat Non-contract Farmers
Yield (quintal/acre)	304.2	17.18	198.1	16.7
Sold (%)	100	86.7	100	84
Quantity sold (quintal)	304.2	14.9	198.1	14.01
Price (₹/quintal)	167.6	1,550	340	1,550
Gross return (₹/acre)*	50,967.4	26,629	67,354	25,885
Production cost**₹/acre)	38,371	20,718	45,048	20,856
Marketing cost (₹/acre)	2,396	680.9	2,856	427.3
Total cost (₹/acre)	40,767	21,398.9	47,904	21,283.3
Net returns (₹/acre) ***	10,200.4	5,230.1	19,450	4,601.7

*Gross return is the value of output per acre (that is, price per unit times the output per acre).
** Denotes costs including all the direct expenses incurred on crop production in cash and interest on working capital + rent paid for leased-in land + interest on the value of fixed assets + imputed value of family labour. ***Net returns = Gross return – Total cost.
Source: Field survey (2016).

Table 5 presents the results of the treatment effect model. The selection equation, which predicts participation in CF, reveals that farm size has significant positive impact on the CF participation, and so is the possession of farm machinery, among other things. Agricultural assets, inclusive of physical assets (such as farm equipment) are one of the indicators of a farmer's financial position (Chauhan et al 1973). This is indicative of the fact that the contracting firms work with medium/large farmers and/or farmers with substantial agricultural/physical asset holdings. Besides the age of farmers (which is negatively significant for sugar beet CF participation) and household size (which is positively significant for chicory CF participation potentially due to labour-intensive farming practices), more years of farming experience and more area under non-traditional high value crops also emerged as significant determinants for CF participation. However, the level of education and income from off-farm sources do influence the farmers' participation in CF, but these are not statistically significant.

Using socio-economic indicators for the selection of contracting farmers may lead to the problem of selectivity bias by the firms. Consequently, farmers contracted may have higher incomes regardless of whether they participate in CF or not. To deal with this problem, the treatment effect model uses participation PROBIT model to estimate an inverse Mills ratio and includes this ratio as a regressor in the income model. Thus, outcome equation in Table 5 estimates farming income as a function of various socio-economic characteristics, the contract dummy variable and inverse Mills ratio. Only two coefficients, size of operational holding and contract participation turn out to be significant, further reaffirm that the large farmers can benefit from participation in CF. Further, the participation in CF can increase their farming income by almost ₹18,041 from sugar beet and ₹44,769 from chicory cultivation. The significant and positive value of the constant also indicates that there are some other unobservable factors that also increase the

Table 5: Treatment Effect Model of Gross Income for Contract Crops

Predictor	Coefficient	SE	P>z	Coefficient	SE	P>z
		Sugar Beet	C		hicory	
Selection equation						
Dependent variable: Contract participation dummy						
Household size (persons)	-0.177	0.123	0.149	0.101**	0.045	0.026
Age (Years)	-0.075**	0.032	0.02	0.040	0.031	0.194
Farming experience (years)	0.055**	0.028	0.053	-0.052	0.027	0.058
Education (years)	0.102	0.068	0.134	-0.053	0.046	0.248
Operated area (acres)	0.005	0.011	0.609	0.033***	0.012	0.008
Off-farm income	1.820	1.790	0.309	3.530	0.002	0.208
Farm implements (no.)	0.193	0.140	0.168	0.277**	0.129	0.032
Proportion of area under non-traditional crops	0.068***	0.012	0.000	0.068***	0.014	0.000
Constant	-0.149	1.402	0.915	-2.334	1.298	0.072
Outcome equation						
Dependent variable: Farming income						
Age (years)	-121.017	126.221	0.338	94.289	76.547	0.218
Farming experience (years)	99.861	125.760	0.427	-36.493	68.146	0.592
Education (years)	-107.592	228.745	0.638	-61.607	131.809	0.64
Operated area (acres)	66.570***	24.917	0.008	69.625**	36.071	0.054
Off-farm income	0.023	0.037	0.526	-0.086	0.054	0.115
Proportion of area under non-traditional crops	99.267	75.087	0.186	-92.944	53.413	0.082
Contract	18,041.13***	3,987.603	0.000	44,768.76***	2,384.798	0.000
Constant	30,547.62***	4,142.054	0.000	21,477.87***	3,197.382	0.000
ath (ρ)	0.825	0.565	0.145	-0.835	0.446	0.061
LR test of independent equations						
Chi-squared (1)	1.92				1.30	
Probability > chi-square	0.165				0.254	

***, and ** significant at 1% and 5% respectively.
Source: Field survey (2016).

farming income. The parameter, ath (ρ) is not statistically significant, implying that there is no selectivity bias.

Farmers' Perceived Benefits and Constraints

Garrett's ranking technique has been used to identify the most significant factors that influence the farmers' perception and hence their decision to participate in CF. As per this technique, farmers were asked to assign ranks to certain factors and the outcomes of such ranking were converted to score values by using Garrett's Table. Then for each factor, the mean values of scores is calculated. The factors having highest mean value is considered to be the most important factor.

Table 6 presents the ranking of farmers' perceived benefits from CF. Diversification away from traditional wheat to new crops, higher income and improvement in soil quality (potentially due to cultivation of new crops) are accorded the first three ranks by farmers contracted under both the firms. Another benefit of joining CF, ubiquitously identified by the farmers in the studied sampled, is the assured price for horticulture crop, the marketing of which otherwise entails high risk. The other firm-specific benefits identified by the farmers include the availability of loan, and the technical know-how for growing new crop from RSL; and no threat of damage from animal attacks alongside the climate resilience of chicory crop to improvement in yield of next crop (potentially by using chicory leaves as green manure), under CF with PSPL.

Table 6: Perceived Benefits of Contract Farming

Benefits in Contracting	RSL		PSPL	
	Average Score	Rank	Average Score	Rank
Assured market	46.44	6	32.04	9
Assured price	49.08	5	45.48	5
Access to technical know-how	27.28	9	–	–
Fixed income	33.42	8	57.92	4
Availability of loan facility	41.18	7	–	–
Diversification away from wheat	65.22	2	69.76	1
Higher income	72.2	1	67.28	2
Improvement in soil quality	63.66	3	60.92	3
More beneficial than wheat	51.9	4	–	–
Improvement in yield of next crop	–	–	38.86	7
Less impact of natural calamities	–	–	38.1	8
No impact of animals on standing crop	–	–	39.64	6

Source: Field survey (2016).

Table 7: Perceived Constraints in Contract Farming

	RSL		PSPL	
	Average Score	Rank	Average Score	Rank
Production constraints				
Shortage of labour	65.2	1	74.68	1
High cost of agri-inputs	48.06	3	63.98	2
Lack of credit	–	–	41.84	5
Shortage of water for irrigation	–	–	34.64	6
Emergence of weeds	49.42	2	42.42	4
Poor quality of pesticide	–	–	42.44	3
Pest attack	37.32	4	–	–
Procurement constraints				
Low price	70.46	1	68.24	1
Delay in payment	64.98	2	–	–
High marketing cost	54.52	3	30.98	4
High deduction rate	53.34	4	–	–
Transport difficulties	45.94	5	48.18	3
Distant market	43.52	6	–	–
Weight loss	40.1	7	–	–
Delay in procurement	37.94	8	52.36	2

Source: Field survey (2016).

Table 7 summarises the factors perceived by farmers as constraints to CF. These factors have been categorised broadly as production and marketing/procurement constraints. The first in order amongst the production constraints is the shortage of labour. Both crops being labour-intensive, this is perceived as a major impediment. It also corroborates with the regression result showing a significant and positive relation between household size and CF participation for the chicory growers. On similar lines, RSL farmers have also pointed to the rapid emergence of weeds in sugar beet, requiring labour-intensive manual weeding.

Another issue in tandem is the high cost of agri-inputs, which is also ubiquitously ranked highly by the contract farmers. The farmers further identified the lack of substitutes for the agri-inputs recommended and provided by the firms themselves, in the local markets, as a reason for such high costs. This is also indicative of the clout that these firms potentially have in the agri-input markets. Simultaneously, lack/limited access to easy credit, water shortage for irrigation and pest attack on the crops have also been identified as critical constraints for CF. In fact, in the context of pest attacks some of the chicory growers of PSPL perceived the pesticides provided by the firm to be of poor quality.

Low price for the contract crops is identified as the foremost marketing issue by the farmers across both the firms. Intuitively, with no alternative marketing opportunity for the new crops being available in the districts, the contracting firms face no competition to raise the price. In the face of escalating input costs and the pressure of maintaining the quality standards, farmers perceive the pre-fixed prices as low. Delay in payments and procurement are ranked the second in order. In the event of farmers' self-delivery to the firms, delivery is constrained by high transportation costs. On the other hand, the firms themselves delay procurement when they collect the produce from farmers' fields. To optimise their transportation/procurement costs firms hold back procurement till the majority/all farmers have completed harvesting. In the absence of a well-coordinated plan of harvesting, supplying and processing of the produce there is loss of quality (sugar beet) and/or volume/weight (chicory) of the produce.

Conclusions

The above analysis of farmers' participation in CF reveals that though such arrangements can create alternative markets for the farmers, incentivise them to diversify away from traditional crops, and even fetch double returns from the new/high value crops vis-à-vis the traditional crops, they are not inclusive of the smallholder farmers. Contracting firms would exclude marginal and small farmers for better resource-endowed large farmers due to the scale economies associated with the latter. Such marginalisation of resource-poor farmers leads to capitalistic mode of agricultural development and reverse

tenancy, where small and marginal farmers lease land to large farmers.

Further, for the farmers to leverage the benefits of CF, the need for legal protection to protect contract growers from the ill-effects of CF, such as violation of contracts, delay in payments, price reduction, undue rejections, etc, has been asserted in the existing literature (Singh 2013). However, despite the regulation supporting CF in the model APMC Act, 2003, the practice could not spread widely, due to alleged resistance from traders and commission agents in the APMC markets who perceive their business getting adversely affected as the contracted produce does not have to pass through the APMC system. Whether enacting CF separately from the APMC domain can really benefit farmers remains debatable. For instance, Punjab that had enacted a separate act on CF in 2013, could not operationalise it till date.

While the 2018 model act has provision to protect farmers' ownership rights on land and makes insurance a part of CF, it fails in several critical areas such as providing clarity on the timeliness of payments, or legal protection to producers against sponsor-lessees' access to farmland, or in keeping the contract prices dissociated from market prices, and more importantly providing for arrangements like group contracts that can safeguard the interest and bargaining power of the smallholders. Given these shortcomings, CF, despite its potential of bringing in new crops, technologies and markets for farmers, can neither be efficient nor inclusive. Thus, the government agenda of doubling the farmer's income by 2022 cannot be achieved when the small and marginal farmers, who constitute about four-fifths of the farming population, are excluded from such arrangements.

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