Received: 16 June 2022 | Accepted: 5 March 2023

DOI: 10.1111/1467-8489.12511

The Australian Journal of Agricultural and Resource Economics AARES

ORIGINAL ARTICLE

Policy preferences of experts seeking to raise and stabilise farm incomes in the Eastern Gangetic Plains

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Funding information
Australian Centre for International Agricultural Research, Grant/Award Number: LWR/2018/104

Abstract

Poverty is endemic in the highly populated Eastern Gangetic Plains where agriculture is critical to more than half the population. However, the mechanisms to support agriculture for development are contested. For example, some have advocated a strong role for government support and assistance due to market weaknesses, while others have promoted the need for more market-oriented approaches. We use an elicitation process focussed on expert policymaking communities, employing stated preference techniques to explore these options. Differences in perceptions about the effectiveness of policies and their delivery are reported between countries, while also empirically examining the influence of the respondents' organisational background. The results show support for policies that improve farmers' access to inputs, especially when delivered by private sector actors. The research provides an important contribution to the literature on policies for agricultural development.

KEYWORDS

agricultural development, best–worst scaling, Delphi method, Eastern Gangetic Plains, rural livelihoods, stated preference

JEL CLASSIFICATION

O130, O120

1 | INTRODUCTION

Poverty reduction remains a significant global challenge, especially in some regions of South Asia and sub-Saharan Africa. Tackling poverty in these locations is inextricably linked to the fortunes of agriculture, with rural poverty being endemic. One path for development is tied to increased productivity and profitability of smallholders. However, the appropriate mechanisms for realising these changes are contentious and opinions about the usefulness of specific policies and support processes have changed over time. It is also the case that individuals who inform this policy discourse bring different values and experiences such that gaining consensus will depend on the extent to which those differences drive opinions about the best way to raise and stabilise farmers' incomes.

In reviewing the policy landscape that supported the development of agriculture in Asia and parts of Africa between the 1960s and the 2010s, Dorward et al. (2009) and Dorward and Chirwa (2014) identify different phases. The 1960s and 1970s is seen as a time when state intervention was favoured to deal with the inherent market weaknesses in postcolonial states. Agricultural input subsidies, output price support and government-controlled distribution were all seen as pivotal to making the most of the technologies offered through the Green Revolution, against a background of a weak private sector. In contrast, a market-led policy approach dominated much of the discourse of the 1980s and 1990s, with a heavy emphasis placed on the government failures of the earlier era. Crowding out private investment and the lost opportunities from more efficient public investments outside agriculture were also key concerns, along with mounting evidence of rent-seeking. The new century ushered in an arguably more nuanced approach where the weaknesses of market liberalisation have been scrutinised without a complete return to blanket endorsement of state-run schemes. While focussing primarily on Africa, Dorward et al. (2009) not only provide explanations for the extant gaps in market-led agricultural development but also find general 'agreement that improved governance and government capacity are critical for agricultural growth'. Arguably, these dual concerns inform some calls for more partnered approaches to agricultural development (e.g. Pancino et al., 2019), but even within a partnered arrangement there will be concerns if 'no agreement exists on the appropriate scope and reach of state responsibilities' (Dorward et al., 2009, p. 19).

One interpretation of this finding is that the appropriateness of high-level policy choices—between market-led versus state-led agricultural development—is still contested, as is the scale at which different interventions might operate. This policy landscape is further complicated by the fact that advice offered on policy is necessarily influenced by the 'location' within the development discourse of individuals offering opinions. For instance, Mockshell and Birner (2015) empirically show that individuals within donor organisations hold significantly different policy beliefs to those located within domestic policymaking circles. Arguably, those within government agencies, who have been charged with crafting policy, could also be expected to hold different beliefs to those from an academic background; after all, the two would usually have 'different goals, attitudes toward information, languages, perception of time, and career paths' (Choi et al., 2005, p. 632). In contrast, Löfgren and Bickerton (2021) argue that the distinction between academic and policy groupings is less clear and Pal (2014) also contends that a policy community is itself defined more by shared reference points and language, even if opinions differ. Mockshell and Birner (2020) also show that policy narratives can be shaped by coalitions across different policy actors who share similar beliefs. Understanding individual preferences about a policy is likely complicated by those beliefs. Similarly, those witnessing different policy outcomes over time will likely form divergent views on the merits of a specific policy to support agricultural development, depending on what they have observed.

This paper is concerned with the preferences of experts towards policies and the alignment of policy objectives with the means of policy delivery. To operationalise our approach, we focus

on expert policy communities comprising government bureaucrats and researchers seeking to formulate and influence evidence-based policies on agricultural development. The paper focusses on the agricultural economies that span the Eastern Gangetic Plains (EGP) with a specific emphasis on states in the north-east of India, Bangladesh and Nepal. We contend that the policy experts in this region share sufficient reference points and language to constitute a community. This region is characterised by a plethora of policy and programme interventions. It is also a region where Australian governments have focussed considerable support; for instance, the Sustainable Development Investment Portfolio contributed more than $A40 million between 2016 and 2021 specifically to explore policy options for developing agriculture (see, ACIAR, 2018). Achieving these types of changes requires support from different actors in the policy milieu, and understanding their perspectives on options is a helpful starting point. Our objective in this study was to identify the policy options and delivery mechanisms that experts in the region supported as a means of achieving higher and more stable incomes for farm households. In addition, we explored differences between experts within the policy community to establish the importance of national influences and to investigate whether the background of the decision-maker was also influential.

The paper makes an important contribution to the agricultural development literature by empirically analysing the preferred policy and delivery options expressed by different experts. The paper provides results of a novel elicitation process that employs both Delphi and the best–worst scaling (BWS) techniques and measures differences in perceived policy effectiveness. Results from a second-stage process focussing on the mechanisms considered the most effective in delivering those policies. Differences in the perception of the most effective policies (and the means of their delivery) are reported between countries, along with an examination of the characteristics of respondents. Importantly, the findings provide guidance around policy development as well as offering direction for researchers interested in policy formulation processes and institutional analysis.

The remainder of this paper consists of five additional parts. In Section 2, we provide a synoptic overview of the agricultural challenges of the region. This includes a brief description of the policy landscapes in the EGP and contrasts between Bangladesh, India and Nepal. This section also presents some tentative views about how experts in the region might be influenced by this landscape, as informed by the literature on policy dynamics. Section 3 briefly summarises the application and outcomes from a Delphi analysis of the policymaking community and describes the translation of the Delphi results into a BWS instrument. The theoretical and practical elements of this part of the study are also presented. The empirical analysis and results of the BWS study are presented in Section 4, and policy implications are offered in Section 5. Brief concluding remarks and areas for further development are presented in Section 6.

2 | THE AGRI-POLICY LANDSCAPE OF THE EASTERN GANGETIC PLAINS AND SOURCES OF DISAGREEMENT

The EGP is one of the most populated regions on the Earth spanning the states of Bihar and parts of West Bengal in India, Terai in Nepal and Northwest Bangladesh. Agriculture is critical to the livelihoods of more than half the population in the EGP, and agricultural development is viewed as a mainstay for reducing poverty, food insecurity and undernourishment (e.g. Khanal et al., 2020). The administrative and policy approaches of the different governments share much in common, but there are also substantial differences. Historically, all three countries have employed some form of longer term planning agency to formulate paths for transformation. Combined with national policies, strategies and action plans that cover agriculture, food security, nutrition, irrigation, gender inclusiveness and water resources, this creates a

complex administrative landscape. In addition, all countries have provided some degree of support to agriculture through subsidies and output price controls, often reflecting concerns about the 'serious' hunger index scores experienced in each jurisdiction (GHI, 2020) and a view that farmers alone cannot respond to the food production challenges.

Across the different jurisdictions, subsidies for agriculture are probably most engrained in India. According to a recent estimate, per-hectare input subsidies from central and state governments in India are equal to 18.5% of farm income/hectare, while the price support on outputs is to the tune of 2.5% of farm income. Chandrakanth (2022) further estimates that the Government of India spends nearly Rs. 1.0 trillion per year to subsidise various agricultural inputs: Rs. 700 billion on fertiliser subsidies, Rs. 200 billion on low-interest farm loans and Rs. 65 billion to subsidise premiums on crop insurance. State governments spend another Rs. 1.1 trillion per year to subsidise electricity for irrigation (Rs. 900 billion), subsidies on canal irrigation (Rs. 175 billion) and crop insurance subsidies (Rs. 65 billion). Both state and central governments also subsidise other inputs like improved seeds, soil micronutrients, bio-fertilisers and capital expenditure on farm machines, including solar panels, and micro-irrigation systems.

Most of these subsidies distort prices resulting in inefficient use of inputs like chemical fertilisers and overexploitation of natural resources like groundwater. They are also regressive as large farmers capture a disproportionate share of the subsidised inputs (Howes & Murgai, 2003). Furthermore, price distortions have also led to inefficiencies in the input manufacturing sector and there is a lack of competition in input markets. The rapidly rising input subsidies to agriculture in India are also squeezing out public investments in agriculture. Public investments in agriculture as a percentage of agricultural GDP have declined from 3.9 per cent in 1980–81 to 2.2 per cent in 2014–15, while input subsidies as a percentage of agricultural GDP have increased from 2.8 per cent to around 8 per cent over the same period (Gulati et al., 2018).

The rapid increase in the public expenditure on input subsidies and the resulting unsustainable and inefficient use of scarce resources and crowding out public investments in agriculture (including agricultural R&D) are some of the reasons why some Indian experts have expressed an aversion to any further increase in price subsidies on agricultural inputs. Experts' distaste for new subsidies is increased by the stiff resistance in the polity to withdrawing unproductive subsidies or even converting them into nondistortionary cash transfers (Kishore et al., 2013).

Compared with India, input subsidies are relatively limited in Bangladesh and Nepal. Bangladesh continues to heavily subsidise chemical fertilisers, but subsidies on electricity for irrigation, crop insurance premiums or farm loans are comparatively small or absent. Shahabuddin and Rahman (2017) provide a brief overview of the more liberalised approaches to emerge in Bangladesh agriculture in the 1980s and 1990s and relate this to the resultant growth of rice production. The Food Planning and Monitoring Group (2020) within the Bangladesh Government reported that the subsidy for fertilisers equated to about 1.6 per cent of the total national budget in 2019. Recent increases in the global price of fertiliser are expected to increase the public subsidy on fertilisers within current budgets, although there is no evidence of significant shifts towards subsidies in other areas of agriculture. Notionally, government procurement of grain for domestic consumption provides some additional support, but this clearly needs to be weighed against the international price that can exceed the procurement price on offer.

Nepal has broadly sought to liberalise agriculture in the last four decades, with assistance from the Asian Development Bank and the World Bank (see, e.g. ADB, 2004), but this has generated mixed results. Chemical fertilisers are subsidised in Nepal, but the government distributes only a limited quantity of subsidised fertilisers and the remainder is derived primarily from India through informal and illegal cross-border trade, given the excess demand (Takeshima et al., 2016). USAID (2014) estimated that the shortfall in government-subsidised

fertiliser against demand was as high as 70 per cent, especially given the expansion of irrigation and multicropping. Current national budgets have allocated monies to support agriculture, including around $A120 million for fertiliser subsidies. Other measures include rebates for the purchase of certified hybrid seeds and an option to defer insurance premiums until postharvest (The Farsight, 2021). Nonetheless, these measures fall well short of the government support provided to Indian farmers.

We hypothesise that the shorter and arguably less perverse history of agricultural subsidies in Bangladesh and Nepal means that expert communities in those jurisdictions will hold different views about policy effectiveness compared with their counterparts in India. Our hypothesis draws upon Fossati's (2018) observation that 'institutional legacies […] differentially influence actors' (activation) preferences'. This occurs on three grounds: 'preferences for/against a specific measure are reactions to policies that have already been implemented' (p. 526); actors 'interpret a strategy based on what is implemented in their country and ponder whether adding a particular policy matches, reinforces or contradicts the preexisting framework' (p. 526); and 'the institutionally pre-structured social outcomes likely affect actors' preferences' (p. 527). Thus, while preferences for policy in the EGP might differ by jurisdiction in our case, the extent to which differences of perception about policy effectiveness occurs remains an empirical question largely unexplored.

3 | A DELPHI ANALYSIS OF POLICYMAKERS' OPINIONS AND ITS TRANSLATION INTO A BWS EXPERIMENT

The Delphi method centres on structured interactions with experts to collect information where the topic is uncertain, or information is incomplete. In this case, experts were defined as meeting one or more of the following criteria: (1) having more than 10 years of experience working in agricultural development; (2) having a track record of liaising with high-level decision-makers in South Asia; (3) having a deep understanding of either water management, agricultural risk or knowledge acquisition by farmers; (4) holding an appreciation of the dynamics of inclusiveness in agriculture in the region; and (5) possessing a wide understanding of agricultural systems and their interrelationship with policy.

This project initially employed a 2-round Delphi study in order to allow expert communities to openly express their view about the policy and policy delivery landscape. Round 1 of the Delphi study comprised an open-ended survey administered partly online and partly in person, with approximately 60% of responses assembled in person. Round 1 was shaped around the following statement:

> This project is NOT about developing new policies. Rather, we want your opinions on what helps deliver changes on the ground, especially as it relates to better incomes and livelihoods for farmers.

In this initial round, the opinions of 70 experts were gathered comprising 26 respondents from Bangladesh, 35 respondents from Nepal and nine from India. This round was completed in June 2019. The panel consisted of experts from several sectors, including universities, research organisations, nongovernmental organisations, state government, national government agencies and the private sector; the disciplinary background of participants covered agricultural science, environmental science, economics, engineering and food technology; the age of the experts ranged from 30 years to over 70 years; 96 per cent had 10 or more years experience working in agricultural development; 5 per cent of the panel were female.

The Braun and Clarke (2006) six-step approach was used to analyse the Round 1 Delphi data. First, the responses were examined to establish thematic spread. This was done by sharing the

TABLE 1 Component ratings from Delphi round 2 using Likert responses (means and standard errors).

Item	All jurisdictions	Nepal	Bangladesh	India
Deals with farm inputs in isolation	4.05 (1.16)	4.11 (1.21)	4.24 (1.12)	3.90 (1.16)
Deals only with farm outputs	4.27 (0.99)	4.02 (1.15)	4.56 (0.51)	4.31 (1.04)
Involves government actively on the input side	3.87 (0.89)	3.77 (0.84)	4.12 (0.88)	3.81 (0.94)
Involves government actively on the output side	4.34 (0.96)	4.31 (1.07)	4.48 (0.77)	4.28 (0.99)
Deals with both inputs and outputs	4.33 (0.97)	4.31 (1.21)	4.04 (0.97)	4.52 (0.71)
Encourages diversification away from agriculture	3.95 (1.11)	3.43 (1.39)	4.16 (0.74)	4.26 (0.85)
Encourages diversification within agriculture	4.57 (0.86)	4.20 (1.25)	4.68 (0.47)	4.83 (0.43)
Involves more leadership by the private sector	4.07 (0.84)	4.11 (0.72)	4.16 (0.80)	4.00 (0.96)
Requires more proactive leadership by government	4.39 (0.89)	4.37 (0.97)	4.52 (0.65)	4.33 (0.95)
Involves a partnership between government and farmers	4.35 (0.85)	4.37 (0.68)	4.36 (1.18)	4.33 (0.75)
Is created from the bottom up by farmers themselves	4.37 (0.68)	4.28 (0.62)	4.04 (0.84)	4.64 (0.53)
Involves farmers having more access to locally developed technologies	4.29 (0.83)	4.00 (1.05)	4.48 (0.51)	4.42 (0.73)
Involves farmers having access to state-of-the-art technologies even if developed elsewhere	4.26 (0.79)	4.17 (0.89)	4.28 (0.61)	4.33 (0.81)
Relates to more effective transport for farm households	4.66 (0.69)	4.71 (0.89)	4.64 (0.48)	4.64 (0.61)
Has the trust of farmers	4.37 (0.85)	4.08 (1.06)	4.48 (0.71)	4.54 (0.67)
Is consistent with customs and social expectations related to local farming	3.56 (1.27)	3.26 (1.44)	3.64 (1.11)	3.78 (1.17)

verbatim material across four members of the investigating team who independently grouped the material into areas of interest before collectively reaching agreement on the main elements. Themes were identified that centred on agricultural inputs and outputs; the role of government and markets; diversification within agriculture and outside agriculture; and the constraints and facilitation offered by local customs and traditions related to agriculture. In addition to the four main themes, closer examination of the responses from Round 1 was undertaken to identify the specific items or components that were relevant. A total of 16 items were identified, and these are summarised in Table 1.

In Round 2 of the Delphi study, the same panel of experts was contacted for their reaction to the Round 1 synthesis and to validate the 16 extracted items for comprehensiveness. Respondents were also presented with a 5-point Likert scale response format to indicate their view about the relative importance of each item in the context of raising and stabilising farm incomes (with 'very unimportant' = 1; and 'very important' = 5). This round also applied the snowballing technique, where experts were asked to nominate others who would meet the selection criteria—noting that this did not include farmers—and to also indicate individuals who were experts but might hold contrasting views to their own. This approach was expected to produce a sample of expert opinion, although there are no clear mechanisms for testing

representativeness in such cases. A total of 102 complete responses were gathered from across the study region for this round. These comprised 42 from India, 35 from Nepal and 25 from Bangladesh, with the round completed in November 2019. The experts in this case had all worked in policy-related settings and amassed extensive experience and knowledge of at least one country. While the majority had a disciplinary background in agricultural science (75 per cent), there was also representation from those with qualifications in economics, engineering, food technology, applied geology, commerce and management, and information and computing systems. Similar to Round 1, the panel consisted of experts from sectors covering universities, research organisations, nongovernmental organisations, state government, national government agencies and private sector. The age of the experts ranged from the 25- to 29-year bracket to those over 70 years; 92 per cent had 10 or more years of working experience in agricultural development; 19 per cent of the panel were female, an increase in representation to that of the first round.

Overall, there were no material queries raised by respondents about potentially missing elements, suggesting some consensus on this front, although questions emerged in relation to the meaning of the concepts in Item 16 (is consistent with customs and social expectations related to local farming). Table 1 presents the scores derived from the Likert scale responses for all of the study jurisdictions and then by each country.

Most of the items presented are uniformly agreed as important, and little variation by country is evident. For example, 10 of the items are rated as 'important' or 'very important' by at least 80 per cent of respondents in each of the three countries surveyed. Against that background, it was considered imperative to further investigate the relative importance of using approaches that would challenge respondents to be more discriminating.

The Best-Worst Scaling (BWS) experiment is a form of discrete choice experiment and offers promise in achieving a more discriminating response from participants. Its origins are attributed to Louviere and Woodworth (1990) and Finn and Louviere (1992). BWS forces respondents to discriminate between the items under consideration, and it allows researchers to investigate underlying preferences via the choice tasks. There are different 'cases' of BWS with 'case one' applying when the interest is the relative weight respondents allocate to items. The analysis can centre on brands, products or policy goals (Flynn & Marley, 2014), and the choice tasks are generally considered less onerous on respondents than many other discrete choice experiments.

In this instance, the BWS design initially commenced by analysing the 16 policy-related items emanating from the earlier Delphi analysis. What is apparent from these items is that they are made up of 'higher-level' policy approaches and 'lower-level' delivery mechanisms. Accordingly, including only the higher level policy approaches in the BWS experiment was likely to add clarity and simplify choices for the respondent. A total of eight policy-related items thus resulted from this approach and comprised two main subgroups: (a) those relating to farm inputs and outputs and (b) those related to technology and diversification. The description of each item by subgroup appears in Table 2. One of the observations from the Delphi study was the frequent requests by respondents to be presented with examples to help better understand the elements they were ranking and commenting upon. To deal with these concerns, generic examples were provided when describing the features of interest. Of particular note are the item 'cheaper farm inputs' that captures a range of subsidies applied to agriculture across the region and the item 'more stable farm output prices' that relates to output price support schemes. To aid comprehension and reduce the cognitive burden placed on respondents, a series of pictograms related to each item was also developed and included in the experiment following testing with different audiences in focus sessions. The pictograms also appear in Table 2.

The remaining four items from the Delphi analysis described alternative delivery mechanisms. As with the policy items, there were benefits in providing examples of each 'delivery'

TABLE 2 'Policy' items and subgroups for BWS experiment.

Group	Item description in BWS experiment	Pictogram
Features related to farm inputs and outputs	Cheaper farm inputs (e.g. subsidised fertiliser and electricity)	
	Easier access to farm inputs (e.g. quality seeds; in-time irrigation water, electricity; credit; good roads)	
	Higher farm output prices (e.g. more competition among buyers; easier access to markets with more buyers)	
	More stable farm output prices (e.g. public procurement of rice, or other produce, at minimum prices; market linkage development for higher prices)	

TABLE 2 (Continued)

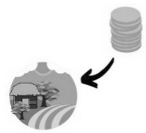
Group	Item description in BWS experiment	Pictogram
Features related to diversification and technology	More income from nonfarm sources (e.g. support such as subsidy or training for developing off-farm income such as small agribusiness enterprises and shops)	
	Farmers adopting different types of crops (e.g. subsidies/credit/seed to grow different crops such as vegetables, oil and pulses)	
	Farmers increasing noncrop farming (e.g. credit/subsidies to support livestock/fishing or other noncrop farm activities)	
	Easier access to modern technology (e.g. low-till seeders, tractors, threshers; hybrid seed varieties)	

TABLE 3 'Delivery' responsibility of items.

Action by the private sector (e.g. private sector, such as fertiliser and pesticide dealers, providing advice on crop farming, access to equipment, or know-how on markets and new products)
Action by governments (e.g. government agriculture office [extension service] providing advice)
Partnership between farmers and government (e.g. farmer organisations, such as FFS, CIG and IPM Club, supported by the government)
Action by farmers themselves (e.g. producers and/or marketing cooperatives built around certain commodities)

item, but again this needed to be weighed against the prospect of biasing respondents to a specific instance of delivery. Generic examples were added to the descriptors (Table 3).

The BWS experiment was presented in English, given that experts at this level were multilingual and English was common across the region. A paper-based version of the survey instrument was also piloted with 30 alternative experts in India to ensure that the nomenclature resonated and to explore the number of choice sets that could be attempted before respondent fatigue set in.

3.1 | Survey design, administration and sample

Since it is not feasible for respondents to face every possible choice set, an experimental design is required to provide the full range of trade-offs across the total respondent sample. In this instance, each choice set comprised four items drawn from those listed in Table 2. A programming-based algorithm within *Sawtooth Software's Lighthouse Studio* program was used to generate the optimal design. This approach employs a cyclical algorithm that repeats the process 1000 times to choose a combination of items that satisfy criteria like frequency balance, connectivity, orthogonality and positional balance (see, e.g. Khosroshahi et al., 2021). To avoid issues with specific combinations of items influencing outcomes, 10 designs were generated and allocated at random to respondents. The design ensured that each respondent would face eight choice tasks only and that for each individual the design was balanced so that each item was present an equal number of times (in this case, 4). Respondents were shown repeated subsets of four policies and in each case asked to indicate which they regarded as the most effective and the least effective measure to increase and stabilise farmers' incomes.

The survey itself had four parts. The first part of the survey included a range of socioeconomic questions about the respondent, including their advisory background and the level of government with which they had most familiarity. This part included a question about the country in which respondents had most expertise. The second part of the survey was used to present the BWS experiment as it related to policy options. A sample choice task was used to explain the choice process before the actual sets were completed (Figure 1).

The third section of the survey asked respondents to rate their preferred delivery mechanisms specifically as it related to their most preferred options identified in Part 2 of the survey. This was done by dynamically programming the survey such that it automatically identified the respondent's four most preferred policy options as they completed the BWS part of the survey. Subsequently, each of the four items reappeared and the respondent was then presented with each of the possible delivery mechanisms in Table 3. Respondents were asked to nominate their two most preferred delivery mechanisms by numbering '1' as the most preferred and '2' as the second most preferred for each of their top four policy options. An example of this task within the survey appears in Figure 2.

The final section of the survey comprised some attitudinal questions along with questions probing the extent to which respondents understood the survey, their preference

FIGURE 1 Sample choice task as part of BWS part of survey.

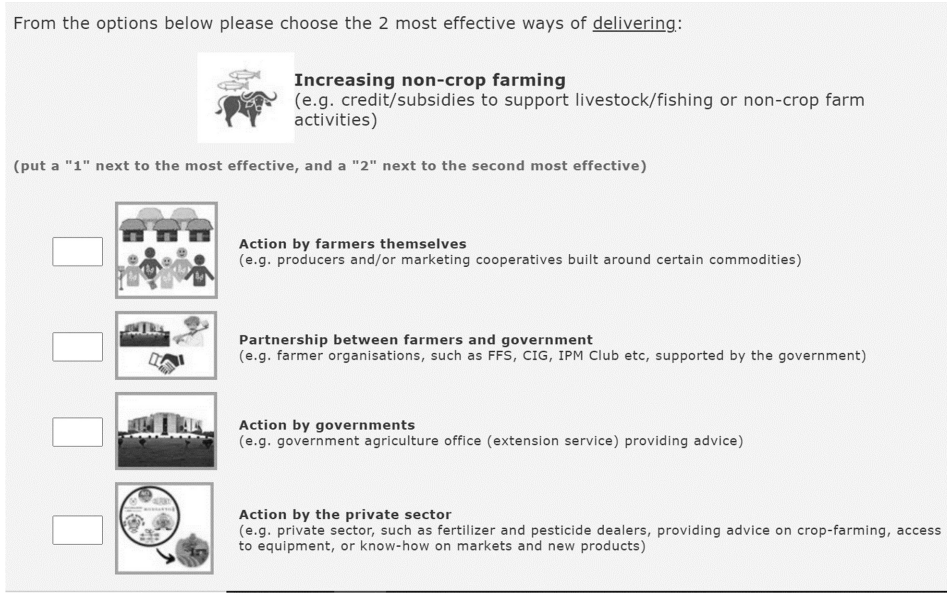


FIGURE 2 Example ranking of delivery mechanisms against a specific policy option.

for additional information and the extent to which COVID-19 may have impacted their responses.

The survey was initially deployed in September 2020. The onset of COVID-19 meant that many of the participants were required to fulfil other important tasks; thus, recruitment was

not immediately prioritised. Rather, the survey was left open, and as opportunities arose to prompt responses within one of the jurisdictions, the research team would contact participants engaged in the earlier Delphi recruitment and encourage referral to others who met the selection criteria. By March 2021, the survey had been completed by 96 experts in agricultural development. About a quarter of the respondents had participated in at least one round of the Delphi, the remainder responding as a result of referral.[1] A total of 768 BWS choice observations were available for empirical analysis.[2]

The location of the expertise of participants included Bangladesh (36 per cent), Nepal (38 per cent) and India (26 per cent); 79 per cent of the sample were male; there was representation from age groups ranging from 25–29 years to over 70 years, with the majority falling in the 40–59 years category (58 per cent); all of the participants had a university education, and there was representation from a number of disciplinary backgrounds, including agricultural sciences, biological sciences, environmental sciences, economics, commerce and management, information and computing, law and legal studies, and technology. The sample included experts from various sectors such as national government agencies, state government agencies, research organisations and nonprofit organisations, with 30 per cent working for a government organisation (state or national); and 91 per cent of respondents had 10 years or greater experience in agricultural development.

4 | RESULTS FROM A BEST–WORST SCALING EXPERIMENT

There are several approaches to analyse BWS data (see, for instance, Louviere & Flynn, 2010; Louviere et al., 2015). In this case, we employ a conditional logit regression (see, e.g. Flynn et al., 2008) using a stacked dataset of both best and worst choices (see Louviere et al., 2015), with a reversal of sign on explanatory variables, implying that the 'worst' choices are the opposite of best. The estimates obtained from the conditional logit model are highly correlated with the rankings obtained through other methods, but it has the advantage of being able to formally test for differences in preference structure across groups, using standard statistical tests. We formally test for differences across countries using the country in which the respondent had most expertise and a log-likelihood test comparing a general model (coefficients across all countries are different) to a restricted model (all countries have the same preferences).

The null hypothesis that preferences can be restricted to be the same across countries is rejected ($p < 0.001$), even when one allows for heterogeneity in error variance across countries. As such, we report estimates by country.[3]

4.1 | Expert preferences by country

In this section, we report the results of three conditional logit models. Table 4 reports estimates of the conditional logit models, by country, with item 8 (*Easier access to modern technology*) used as the reference category.

[1]A reviewer raised the question of whether being a member of the Delphi process may have changed their subsequent BWS responses. There is limited evidence of ordering effects (Burden et al., 2019, found similar responses between two such groups), and our sample size prevents us from testing for it here.

[2]Over 80 per cent of the sample stated that they would have responded the same, regardless of the COVID-19 pandemic.

[3]The composition of the sample in terms of organisation of the experts differs across countries, and this may be a source of some intercountry differences. This is explored further in Section 4.4, but the number of experts using this bivariate split is low in some cases so the evidence is indicative at best.

TABLE 4 Conditional logit results, by country.

Item	Bangladesh	Nepal	India
Cheaper farm inputs	−0.663***	−0.916***	−1.591***
	(0.19)	(0.187)	(0.252)
Easier access to farm inputs	0.414**	0.459**	0.708***
	(0.188)	(0.185)	(0.239)
Higher farm output prices	0.0727	−0.511***	0.715***
	(0.189)	(0.185)	(0.239)
More stable farm output prices	0.401**	−0.242	0.0326
	(0.188)	(0.185)	(0.236)
More income from nonfarm sources	−0.284	−0.745***	0.670***
	(0.188)	(0.184)	(0.235)
More variety in the crops grown	−1.112***	−1.367***	−1.022***
	(0.19)	(0.188)	(0.239)
Increasing noncrop farming	−0.611***	−1.176***	0.504**
	(0.19)	(0.188)	(0.239)
Choices	280	296	192
Individuals	35	37	24
LL value	−720.00	−742.41	−444.84

Note: Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Reference item: Easier access to modern technology.

A negative sign in this case indicates that the policy is less preferred than the reference or base policy (*Easier access to modern technology*), while a positive sign shows that the policy is more preferred than the base. P values indicate the systematic ranking of parameters by respondents. For example, in the case of *Cheaper farm inputs*, experts systematically rank this policy (i.e. $p < 0.01$) as less preferred (i.e. negative sign) relative to the base policy in all three countries and *Easier access to farm inputs* is systematically chosen (i.e. $p < 0.05$ or less) as more preferred (i.e. positive sign) to the base in each country.

Parameter estimates can be compared across countries in terms of signs, but relative values are more difficult to discern because they are conflated by the error variance. Scaled 'importance scores' can be generated to deal with this challenge, and this involves two steps. First, we redefine a set of parameters β_i, which are the original set of parameters transformed to be zero-centered. Second, we calculate the probability that an item will be selected as best if in a binary choice set with an 'average' item; that is,

$$W_i = \frac{\exp(\beta_i)}{(1 + \exp(\beta_i))} \tag{1}$$

W_i are then rescaled, so they sum to 100 (see Sawtooth Software, 2020).

An important feature of these scores is that they have the property of being ratio-scaled, meaning that a policy with a score of $2x$ is regarded as twice as effective as one with a score of x. A feature of this approach is that the weights are influenced by the error variance, with higher error variance in a sample leading to the probabilities being 'flatter' around an average weight of $100/k$ where k is the number of items.

TABLE 5 Importance scores by country.

Item	Bangladesh	Nepal	India
Cheaper farm inputs	9.77	10.33	4.15
Easier access to farm inputs	16.32	18.41	16.47
Higher farm output prices	14.31	12.84	16.51
More stable farm output prices	16.25	14.51	12.48
More income from nonfarm sources	12.10	11.38	16.26
More variety in the crops grown	7.27	7.74	6.50
Increasing noncrop farming	10.08	8.80	15.32
Access to modern technology	13.86	15.95	12.28

4.2 | Comparing preferences by country

Table 5 reports the probability scores for the three countries. In common, across all three countries, *More variety in the crops grown* is not ranked highly. Alternatively, three items related to farm inputs and outputs are all ranked relatively highly, namely *Easier access to farm inputs*, *Higher farm output prices* and *More stable farm output prices*. In contrast, *Cheaper inputs* are weighted relatively low, particularly in the Indian sample for whom it was regarded as the least effective measure.

Easier access to farm inputs is 2.24 times more important compared with *More variety in the crops grown* in Bangladesh and 2.38 and 2.53 times more important in the case of Nepal and India, respectively. Having *Easier access to modern technology* is 1.91, 2.32 and 1.89 times more important than *More variety in the crops grown* in Bangladesh, Nepal and India, respectively.

At the outset, we speculated that expert opinion about the effectiveness of input subsidies might vary given the differing histories across countries. The relatively low expert preference for the provision of cheaper inputs among Indian experts is of interest in this regard. The plethora of high and distortionary input and capital subsidies already in place in India was highlighted earlier. The ongoing policy discourse on the environmental and fiscal burden of these subsidies (Badiani-Magnusson & Jessoe, 2019; Bathla et al., 2017) and the need to redirect the limited budgets from subsidies to public investments in agriculture (Hoda & Terway, 2015) may also have influenced India's experts' rankings (Ramaswami, 2021). Some agricultural inputs like fertilisers are subsidised in Bangladesh and Nepal too, but the subsidy outlays are significantly higher in India.

By comparison, Indian experts place a relatively higher weight on *Diversifying into non-farm income sources* and *non-crop farming*. Notably, of the items related to diversification and technology, *Easier access to modern technology* is given a relatively high weight in all three countries. This might not be unexpected given the general movement of labour out of agriculture in the region and the simultaneous requirement to maintain or raise agricultural productivity by employing more capital.

4.3 | Preferences for 'delivery' institutions

Recall that each respondent's policy preference was calculated in real time during the survey, allowing them to be subsequently presented with their personalised 'top 4' policies. Respondents were then asked to rate the two most effective ways of delivering each 'policy' (*Action by the private sector*; *Action by governments*; *Partnership between farmers and government*; and *Action by farmers themselves*). Accordingly, there will be a relationship between what the aggregate

TABLE 6 Percentage of times a delivery 'institution' is selected as first and second most effective way of achieving a 'policy' item, for all (N) respondents who identified the item in their top 4 means of increasing and stabilising farmer incomes. All countries combined.

Item	Order	Partnership	Private	Government	Farmers
Cheaper farm inputs	1	50.0	36.7	3.3	10.0
$N = 30$	2	6.7	20.0	63.3	10.0
Easier access to farm inputs	1	29.0	39.1	14.5	17.4
$N = 69$	2	17.4	30.4	36.2	15.9
Higher farm output prices	1	28.8	32.7	23.1	15.4
$N = 52$	2	32.7	21.2	15.4	30.8
More stable farm output prices	1	23.2	28.6	14.3	33.9
$N = 56$	2	44.6	7.1	33.9	14.3
More income from nonfarm sources	1	20.0	36.0	16.0	28.0
$N = 50$	2	40.0	22.0	16.0	22.0
More variety in the crops grown	1	21.4	25.0	14.3	39.3
$N = 28$	2	28.6	17.9	32.1	21.4
Increasing noncrop farming	1	27.0	24.3	16.2	32.4
$N = 37$	2	29.7	21.6	13.5	35.1
Easier access to modern technology	1	33.9	35.5	25.8	4.8
$N = 62$	2	32.3	27.4	25.8	14.5

Note: N = number of times an item was in the top 4 ranked items.
Values are % of times the method of delivering the policy outcomes was ranked as first (1) or second (2).

analysis suggests is the best item and the individual top 4; however, these are based on different analytical approaches: an average across respondents of best versus the sum of individual bests. In Table 6, we present the frequency with which a policy item was selected in the top 4, and then the percentage of times each of the four delivery modes was ranked as either 1 or 2. In some cases, N is necessarily small, reflecting the low frequency with which some measures were ranked in the top 4, and these results should thus be considered cautiously.

In Table 6, we report the percentage of times each delivery mechanism was identified as the best (1) or second best (2) approach for realising each 'policy' item, across all three jurisdictions. For example, for the policy item of *Cheaper farm inputs*, *Partnership between farmers and government* was selected 50 per cent of the time as the most effective way of delivering this outcome, while *Actions by the private sector* was selected 36.7 per cent of the time as the number 1 deliver mechanism. *Action by governments* was selected as the second most effective delivery institution by 63.3 per cent of respondents (who had selected this policy item in their top 4). A formal chi-squared test was undertaken to consider whether the frequency of times a delivery approach is selected as first ranked across the eight policy items is the same. This is rejected ($p = 0.003$), suggesting that the selection of the first-ranked institution differs by policy item and thus provides at least some support for the view that there is some effort on the part of experts to align policy and delivery institutions.[4]

[4]Tables G, H and I in the Appendix report the number of times ***combinations*** of institutions is selected first and second, by country.

TABLE 7 Percentage of times a delivery approach is selected as most effective way of achieving any policy, for all respondents, by country.

	Partnership	Private	Government	Farmers
Bangladesh	28.6	36.4	15.0	20.0
Nepal	27.7	32.4	16.2	23.6
India	30.2	29.2	20.8	19.8

Several immediate observations can be drawn, albeit based on the distribution of choice of delivery. First, across all policies on offer, government is not viewed as the first most effective delivery mechanism. This is not to say that all experts see no role for government. In the case of *Easier access to modern technology*, for instance, government is most preferred to deliver on this front by around 26 per cent of those experts sampled. Second, *Higher farm output prices* is most frequently seen as being best achieved by the private sector, with a third of experts supporting this approach. About 40 per cent of experts see the private sector as best facilitating *Easier access to farm inputs*, and 36 per cent see the private sector playing the main part in realising *More income from non-farm sources*. Third, farmers themselves are seen as best positioned to play a role in achieving *More stable farm output prices* by a third of experts, and between 30 and 40 per cent of experts see farmers as leading *More variety in crops grown* and *Increasing non-crop farming*.

Given the earlier observation that the history of policy and delivery institutions differ in each country, we focus on the in-country and between-country findings. Table 7 below reports the percentage of times a delivery institution was selected as first, across all policy items, by country. Pearson's chi-squared test of a relationship between countries suggests that there are no differences across countries, in the relative selection of institutions, when averaged across all policy outcomes ($p = 0.57$).

However, it is possible that the most effective delivery institution may vary by country and by policy item. To make the remainder of the analysis manageable, we focus primarily on the two options consistently rated highly across the three countries, namely *Easier access to farm inputs* and *Easier access to modern technology*. This has the added advantage of providing more data for analysis, since these two policy options were chosen more often and thus yield more information about preferred delivery institutions. Sample sizes in subcategories require that a degree of caution be exercised in interpreting and generalising results and other policy options are reported in the Appendix S1 (see Tables A–F). Since the frequency in each cell can be small, the chi-squared tests are conducted on the aggregate of first and second rankings and formally test whether there are differences in the percentage of times an institution is selected across countries.

For the *Easier access to farm inputs* policy item, Bangladesh, Nepalese and Indian experts all see a greater role for the private sector as the most preferred means of achieving this goal. Governments are least preferred as the first-ranked delivery institution. Farmers acting independently is also generally not favoured as a means of achieving this goal. When the second most preferred delivery mechanism is reviewed holistically (i.e. taking into account the split between 1st and 2nd preferences in Nepal and India), government appears as the best fallback delivery institution, although Indian experts are equally in favour of partnerships with government and farmers (refer to Table 8).

In the context of *Easier access to modern technologies*, there are no formal differences in preferences across countries (Table 9, $p = 0.21$). There is very limited support for leaving farmers to manage access to modern technology independently.

TABLE 8 Most effective ways of delivering *Easier access to farm inputs.*

	Order	Partnership	Private	Government	Farmers
Bangladesh	1	25.0	45.8	12.5	16.7
$N = 24$	2	16.7	20.8	54.2	8.3
Nepal	1	33.3	36.7	13.3	16.7
$N = 30$	2	13.3	36.7	26.7	23.3
India	1	26.7	33.3	20.0	20.0
$N = 15$	2	26.7	33.3	26.7	13.3

Note: Chi-squared test for contingency table based on the aggregate of 1 and 2 by country and institution: $p = 0.02$.

TABLE 9 Most effective ways of delivering *Easier access to modern technology.*

	Order	Partnership	Private	Government	Farmers
Bangladesh	1	20.8	54.2	20.8	4.2
$N = 24$	2	33.3	20.8	37.5	8.3
Nepal	1	32.0	28.0	32.0	8.0
$N = 25$	2	32.0	32.0	20.0	16.0
India	1	61.5	15.4	23.1	0.0
$N = 13$	2	30.8	30.8	15.4	23.1

Note: Chi-squared test for contingency table based on the aggregate of 1 and 2 by country and institution: $p = 0.21$.

4.4 | A note on the influence of individuals' organisational background

In the preceding analysis, we have disaggregated expert opinion only by the country where the respondent held most expertise. We have noted earlier that the organisational background of individuals within the policy debate may also have a bearing on policy preferences. With that in mind, we explore differences in perceptions between members of different types of organisations. Table 10 gives the sample split by 'government', 'research' and 'other' organisations for each country. In some instances, the N is small (i.e. Indian Government and other along with Bangladesh research organisation) and further analysis of those groups with less than 10 respondents is omitted. Moreover, we acknowledge that generalising from this level of disaggregation and subsample size should be done cautiously and report results primarily in the interests of completeness.

We conducted formal tests to see whether subgroups of respondents, by country and organisation type, can be treated as having the same preferences. The only groups where this was possible were those from government organisations, in Bangladesh and Nepal. All other groups were different. We therefore proceed with five models of preferences.

Figure 3 presents the probability scores for each of the policy options showing both the country and organisation type of the respondents. Immediately apparent in Figure 3 is the divergence of policy preferences for some options, particularly those relating to input subsidies (as captured in the item titled 'cheaper farm inputs'). Research communities in Nepal and government communities in Bangladesh and Nepal rate this option two to three times more favourably than the research community in India. As noted earlier, the breadth, magnitude and history of input subsidies in India are generally greater than for the other jurisdictions and this has led some researchers in India to express concern about their perverse impacts. In contrast, the history of subsidies in Nepal is more confined. Nepal's market institutions are

TABLE 10 Distribution by organisation type and country.

	Bangladesh	Nepal	India
Government	17	11	(2)
Research organisations	(7)	11	17
Other	11	15	(5)

Note: Cells with (n) indicate they were not included in the analysis, as they had too few observations to be separately estimated. Respondents from government organisations in Bangladesh and Nepal were combined as a single group.

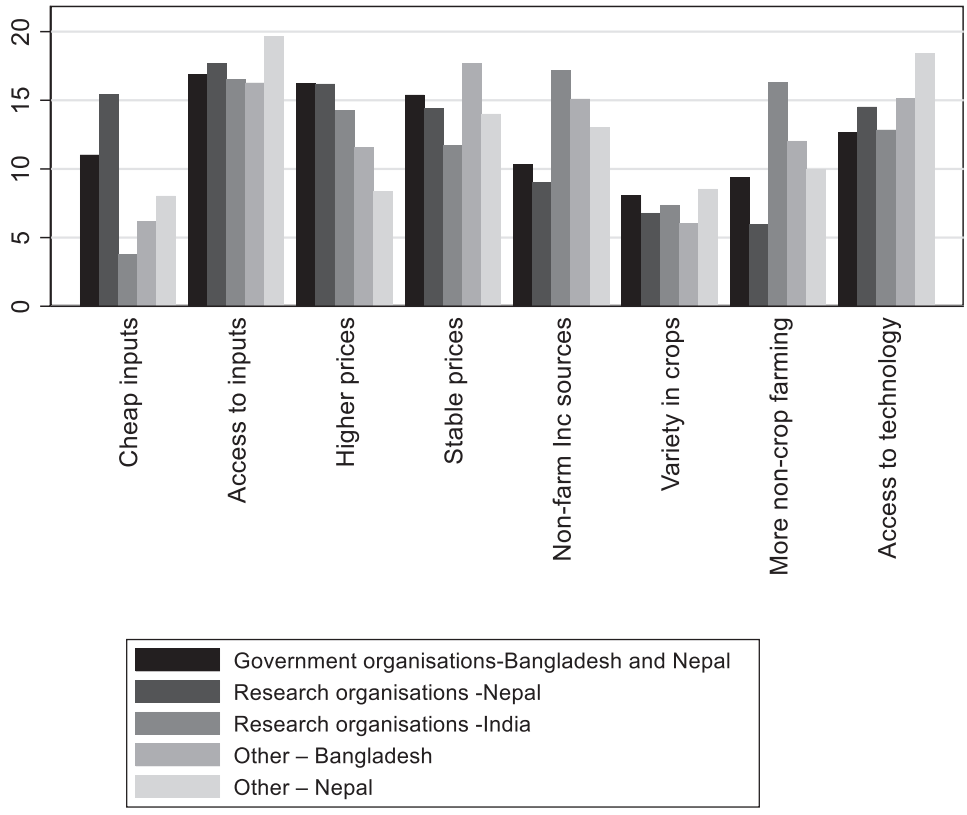


FIGURE 3 Probability scores by policy option and respondents' country and organisational background.

also arguably less developed than some in India, and this may also bear on expert opinion that favours more price intervention by the state.

The other area involving state intervention relates to the stabilisation of output prices, and some divergences are again noticeable for this option. Of the different communities presented with this option, Indian researchers are again least enthusiastic. In contrast, support is most strongly expressed by 'other' (i.e. nongovernment and nonresearch) respondents from Bangladesh, who rate this as their most preferred option for raising and stabilising farmer incomes.

Given our earlier interest in the two most preferred policy options of *Increased access to inputs* and *Increased access to modern technologies*, it is worth noting the influence of organisational background over these two policy choices. *Increased access to inputs* is slightly more preferred by Nepalese experts from nongovernment and nonresearch backgrounds, although it remains well-supported by all other cohorts by background and country. *Increased access to*

modern technologies is also rated more highly by Nepalese experts from the 'other' background relative to the other expert communities.

5 | IMPLICATIONS FOR POLICY FORMULATION

We sought to test the preferred policy approaches and delivery mechanisms for raising and stabilising farmers' incomes in the EGP. At the outset, we have noted that there is no universal agreement on the 'best way' to achieve development in the context of agriculture and the relative role of state intervention is contested by experts. We have also remained silent on the theoretical or practical efficacy of policy—that is, we have not questioned whether the preferences of experts for one policy over another are supported by other evidence. Rather than imposing our own view on what makes for coherent and effective policy and delivery combinations, expert opinion was harnessed in two ways. First, a systematic Delphi study generated a composite list of policy and delivery mechanisms and these were further tested in an additional Delphi round. Second, a BWS experiment was undertaken where experts were asked to rate policies in terms of their effectiveness in delivering higher and more stable incomes to farmers. Having selected the policy options, respondents were then asked to allocate preferred delivery institutions against their most effective policies.

We also hypothesised that there would be systematic differences in preferences that related to country background. Our rationale was that the support for a particular policy is likely shaped by the experiences of its deployment. We were particularly interested in the different histories related to subsidies that aim to reduce the cost of inputs to farmers and noted that this had been more vigorously pursued in India relative to Bangladesh and Nepal. It was also noted that Indian experts were less likely to be supportive of subsidies because of the ongoing challenges around reining them in and limiting their negative impacts. The data gathered in this study offer some support for the view that the historical exposure to input subsidies can have some influence on expert opinion about their limited usefulness in raising and stabilising farm incomes. More specifically, Indian experts rate this as the least effective approach, while Bangladesh experts regard it as the second least and Nepalese experts the third least effective, respectively. An important caveat to this finding is that the sample of experts varied across countries, with the Indian experts comprising more individuals who classified themselves as 'researchers' than the other two countries.

Although expert preferences differed across jurisdictions, it was also clear that two policy options routinely enjoyed more support than others, namely *Increased access to inputs* and *Increased access to modern technologies*. If coherence exists between the policy objective and the delivery mechanisms, we might expect to see some systematic selection of the delivery institutions in each country against these policy objectives.

This is particularly evident in the case of *Increased access to inputs*. The analysis presented in Table 8 shows a significant ($p = 0.02$) chi-squared test for contingency table based on the aggregated first- and second-preferred delivery institutions. Put differently, chance is unlikely to explain the expert selection of delivery mechanism by country. Moreover, there is an overwhelming first preference across all jurisdictions to see the private sector plays a major part in delivering this policy ambition. Taken further, it might be possible to conclude that the bulk of experts in all three countries regard the policy option of *Increased access to inputs* combined with *Actions by the private sector* as offering both the most effective means of increasing and stabilising farm incomes.

There are a variety of plausible explanations for this result. It has been noted elsewhere that the capacity of the state to support farmers through extensions and advice is severely hampered in all three jurisdictions (e.g. Babu & Sah, 2019; Dasgupta & Kapur, 2020). It might not be that surprising that the policy community thus view the capacity and reach of the private sector as being a key delivery option.

In terms of the second policy option of *Increased access to modern technologies*, the findings are less clear. First, Table 9 shows a chi-squared test for contingency table that is insignificant at the 10 per cent level ($p = 0.21$). Second, there is also no clear preference in delivery institutions in some jurisdictions. In Nepal, for instance, the expert community is divided on assigning delivery to government, markets or partnerships between farmers and government. The only clear conclusion that can be drawn from these data was that there was little support among all experts for the view that farmers might independently achieve this goal. In part, this division around the role of modern technology might be explained by underlying differences within the sample. For instance, we have noted that *Access to modern technology* resonates most strongly with Nepalese experts from nongovernment and nonresearch organisations.

More broadly, in the context of the interplay between institutional background and policy preferences, this study suggests that there may be some influences at play, but the small subsample data make it difficult to offer definitive findings on every policy and delivery combination.

6 | CONCLUDING REMARKS

This study outlines a process for collecting information and undertaking empirical analysis that can shed light on the alignment of policies and delivery institutions through the eyes of a community of experts. The study clearly shows the analytical benefits of applying BWS, especially where existing Likert scale measures offer little direction. For example, in the initial Delphi analysis, the top 10 options of the 16 available had Likert scores ranging between 4.26 and 4.66. By carefully defining the items through Delphi and presenting experts with a more discriminating approach around policies, we were able to reveal systematic preferences. In addition, by subsequently programming responses to elicit information about delivery mechanisms we have been able to gain insights into expert opinions about what offers most hope for success.

The findings point to a degree of consensus around policies that increased access to inputs as offering promise for raising farm incomes and making them more stable, at least in the EGP. There is also a level of cohesion around these policies being most efficacious when delivery is managed by greater action in the private sector. The preferences around other policy and delivery options are less clear, although there is some evidence of support for increased access to modern technologies as a policy option.

Across the EGP, the historical policy environment of different countries has been shown to have some bearing on expert opinion. There was also some evidence that the organisational background of respondents had an influence over their preferred policy options, but this requires further analysis with larger samples. As donors and international agencies seek to assist jurisdictions deal with poverty in regions like the EGP, it will be important to consider these influences as part of the policy dialogue.

Some limitations attend this study, and many of them require additional investigation and resolution. Gaining responses from time-poor experts is a challenge for this type of analysis, especially when they face competing demands. Maintaining responses over multiple rounds of engagement is equally difficult but necessary to build sufficient data to support empirical approaches. Having larger samples and shaping mechanisms to validate the 'representativeness' of the broader policy community would also give greater confidence around the generalised nature of findings. Reaching consensus and depicting policies and delivery apparatus in a coherent and consistent way is also problematic, but resolvable with enough iterations with engaged experts.

An important piece of information that would improve this work is understanding the views of farmers in this domain. This information would enable the analyst to test potential overlaps between policies and approaches deemed most effective by policymaking communities and

those most agreeable to farmers. This type of approach offers considerable promise for improving agricultural development in future.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ACKNOWLEDGEMENT

Open access publishing facilitated by University of South Australia, as part of the Wiley - University of South Australia agreement via the Council of Australian University Librarians.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Cooper, B., Crase, L., Burton, M., Rigby, D., Alam, M.J. & Kishore, A. (2023) Policy preferences of experts seeking to raise and stabilise farm incomes in the Eastern Gangetic Plains. *Australian Journal of Agricultural and Resource Economics*, 67, 323–345. Available from: https://doi.org/10.1111/1467-8489.12511