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Article

International Legal Framework on Agricultural Subsidies and Trade Law - With Special Reference to Its Impact on Agriculture and Farmers in India and EU Nations

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Abstract: This paper is an attempt to explore the complex international jurisprudential system that informs the policies related to subsidy and trade law in the area of agriculture, mainly looking at how it is used to differentiate between the aspects of agriculture and farmers in India and EU member states. The study uses the comparative approach to observe the way in which the agreements such as WTO-agreements to Agriculture (AoA) and subsidies and countervailing measures (SCM) help to trigger the policy of Agriculture and trade relations. The study further uses new feature extraction techniques for generating low-dimensionality agricultural datasets to derive potent factors that determine agricultural competitiveness and farmer welfare across the two economies. Results indicate considerable differences between developed EU countries and poor India in subsidy schemes according to their different existing legal frameworks, leading to disparate consequences for their agricultural sectors. An investigation indicates that while farmers in the EU enjoy developed support mechanisms defined as minimally trade distorting, Indian farmers suffer from more risks now under the current international trade norms. Agriculture remains a very important lifeline security for many of these farmers. The last part of the research recommends reforms in the policy for a better international agricultural trade creation concerning the efficiency side of the economy, considering rural development and food security across different levels of economic development.

Keywords: Agricultural subsidies, WTO, Agreement on Agriculture, India, European Union, Trade law, Feature selection, Dimensionality reduction, Rural development, Food security.

INTRODUCTION

Agricultural subsidy emanating from international trade law, therefore, is one contentious crossroad between global economic governance and domestic policy priorities. This strongly implies that the functioning of agricultural subsidies is going to dictate food security, rural livelihoods, and economic development, with special significance for developing and emerging economies like India, while directly affecting competitiveness and sustainability for agriculture in developed circuits like the European Union [1]. Thus, the architecture of the law governing international agricultural trade has really changed over the past several decades and up to the present, especially since the conclusion of the Uruguay Round of negotiations, which brought agriculture properly under the multilateral trading framework for the first time with the birth of the WTO in a completely new era in 1995 [2].

The Agreement on Agriculture (AoA) and the Agreement on Subsidies and Countervailing Measures (SCM), which are the respective measures of the Level of International Law applicable to the trade in agricultural subsidies, provide the ambient framework within which WTO members shall support their agricultural sectors while reducing distortions to trade as far as possible [3]. Nevertheless, even at every turn you find that the choice and the result of the specified measures are dramatically different in the developed economies, like EU, and in the developing ones, like India, which does indicate the major disparity in the agricultural systems, the economic priorities, and the institutions that they possess.

Where the differences are clearer is in the comparison of the real uses of the subsidy in agriculture in both of the two contexts. CAP in the European Union is indeed one of the most rigorous and strongly supported strands of agricultural assistance the planet over and has increasingly changed off of the significant production-based payments to more and more decoupled varieties of aid which show an increasing emphasis on environmental sustainability and rural development [4]. Quite the contrary, the subsidization regime of India is still operating within more stringent fiscal constraints, struggling with more immediate problems of food security and rural poverty, and therefore the regime places more emphasis on market intervention and subsidies on inputs [5].

The central theme of this research is how international legal frameworks that regulate agricultural subsidies affect various agricultural systems, and through such impacts, the millions of farmers who depend on agriculture to sustain their lives. The question has become more topical in the middle of stalemates in the multilateral trade negotiations, increasing attention towards food security since the dawn of the global crises, and awareness of the multifunctional character of agriculture as a provider of not just commodity supplies, but also environmental services and social stability [6].

To take care of such intricate issue, there are certain novel feature selection algorithms used in this experiment with the purpose of dimensional reduction of agricultural data to improve the identification of the key issues dealing with agricultural output, trade competitiveness, and farmer welfare under different regulatory conditions. Under this methodological novelty, the Indian and European environment can be compared much more finely, although there are the evident and significant differences in scale, form, and stage of development.

The applicability of the research is not limited to being of academic value also to the practical implications of international economic law to agricultural stakeholders at the ends of the development scales. By answering the question of how the current legal approach to provision of various results to farmers in India and in the EU, the study can add to the current debate policy on reforming world trade regulations in such a way that they factor in the development needs without so quieting on the existence of the system of international trade based on rules.

Objectives

The primary objectives of this research study are:

- Critical analyses of the international law of agricultural subsidies and with references to the WTO Agreement on Agriculture and the Agreement on Subsidies and Countervailing Measures in relation to India and EU countries.
- Application of a new feature selection algorithm that narrows the dimensionality of different sets of omics data on agricultural output, trade flows, and subsidy effects in Indian and European agrifood systems.
- Comparison of comparative application of agricultural subsidy programs in India and EU, as well as consideration of compliance regimes, policy innovations, and legal challenges in the current international system.
- Assessing the differential effect of international trade rules in the context of farmer livelihoods, agricultural sustainability, and food security in India vis-a-vis the EU member states.
- Evidence-based policy recommendations for reforming international agricultural trade law so as to reflect an appropriate balance between economic efficiency on the one hand and equity and development concerns on the other.

Scope of Study

This research will have the following scope:

- Temporal scope covering the history of international agricultural trade law, starting from the Uruguay Round negotiations (1986-1994) to the Doha Round and the WTO ministerial conferences up to 2024, mainly focusing on current implementation problems.
- Geographic focus on India: a representative developing economy with a large agricultural sector, pressing food security concerns, and juxtaposed

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with the European Union as a collective of developed economies with a sophisticated agricultural policy framework.

- Legal analysis of WTO agreements, disputes, and domestic legislation relevant to agricultural subsidies in the regions selected for this study.
- Economic impact appraisal on subsidy programs, trade, and market impact on selected agricultural commodities important to Indian and European farmers.
- Social impacts-terrain assessments bringing the differential impact of the legal-economic framework on farmer welfare, rural development, and structural transformation in agricultural communities.
- Methodological advance through the application of advanced variable selection techniques on complex agricultural datasets to identify key variables accounting for policy outcomes in different contexts.

LITERATURE REVIEW

It encompasses all meritorious other fields-law studies, economics, agricultural sciences, and development studies. This multidisciplinarity is captured in the multiplicity of academic and policy literature on agriculturesubsidies and international trade law. This overview assembles and synthesizes the major contributions of these field studies into establishing the theoretical and empirical credentials for this study.

Foundations were established in early legal scholarship on the Agreement on Agriculture of the WTO: considered the historical event through which agriculture was brought to the multilateral trade disciplines, but its structural limitations also recognized. A fuller legal analysis of the AoA is presented in Desta [8]. It is argued that much of its architecture consisting of "boxes" representing various groups of subsidies (amber, blue and green) is designed to fit political realities of major agricultural powers rather than a welfare optimization at the international level. Josling [9] shows how these arguments have developed through the tracing of agricultural exceptionalism as found in international trade law and its persistence, despite the reforms introduced by the Uruguay Round.

Besides, in the last few decades, critical legal views have emerged with regard to the distributive effects of WTO agricultural rules. Gonzalez [10] makes an excellent point that the overall structure now makes it constitutionally disadvantageous to all 'developed' countries. Such arguments are extended by Sharma [11], who illustrates how the peculiar standard-setting of subsidy calculation and reporting under the AoA has generated inequitable results between developed and developing countries in the WTO.

Most important contributions of several studies included establishing from an economic setting efficiency and welfare implications of agricultural subsistence for individuals. One of the most influential studies conducted by the OECD is now an annual monitoring on agricultural support using its Producer support estimate (PSE) methodology, which collects comparative information about subsidy levels and types across countries [12]. Anderson and Valenzuela's [13] research team had visited the area of global welfare losses from agricultural protection and subsidy policies without precluding distributional concerns as a justifiable basis for intervention in developing contexts.

There has been considerable literature on the Common Agricultural Policy (CAP) of the European Union as a consequence of changes it undergoes, as well as the impacts that such changes bring about. Matthews [14] describes the evolution of the very production-orientated CAP to a multifunctional CAP offering more environmental services, rural development, and decoupled income support. Political economy concerning this reform process is examined by Daugbjerg and Swinbank [15], emphasizing how international trade commitments have interacted with domestic European pressures to redefine the farm support systems.

The analysis of agricultural subsidies in India indicates an entirely different range of difficulties and priorities. In Gulati and Narayanan, an elaborate overview of the agricultural policies in India is given, whereby explicit budgetary subsidies and implicit ones founded on market interventions are sufficiently recorded. Hoda and Gulati reason, with an especial reference to the issue of WTO subsidy compliance in India, that there are strains between international and domestic food security issues. Recent scholarship has recently started to pay attention to the multifunctional character of agriculture and the subsequent implications of this multifunctionality on subsidy justification and design. According to Garzon, the paradigm shift in the traditional economic analyses of the efficiency of subsidies is necessary to acknowledge the fact that agricultural production is the provider of the public goods, more than commodity goods. This perspective agrees with Sharma call on preferential and differential treatment of developing nations in trade regulations in agricultural trade on non-trade issues like food security and rural livelihoods. According to Evans et al [19], the public goods angle creates a case

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for appropriate subsidy evaluation in itself.
The methodological literature surrounding the analysis of complex agricultural datasets has burgeoned owing to advances in computational techniques [20]; demonstrate that feature selection models are able to identify significant variables which affect the productivity of agriculture and the effectiveness of subsidies in high-dimensional data sets. The procedures offer prospective opportunities in the compared analysis of subsidy effects in dissimilar agricultural regimes.

Even though all these pieces of literature offer the insights of agricultural subsidies and trade law on different focuses, there remains a lack of a synthesis of legal, economic, and computational approaches in the understanding of how international regulations impact various outcomes in various set-up of development. The paper is therefore a bridging step to this research gap since it combines strong legal law analysis with some of the best data-analysis tools to contrast the effects of subsidies under the opposing cases of India and the European Union.

RESEARCH METHODOLOGY

The international legal structure that relates to agricultural subsidies has, on one hand, been studied through comprehensive analyses of the primary legal texts, such as:

- Agreement on Agriculture of WTO
- Agreement on Subsidies and Countervailing Measures
- Relevant reports of the DSB concerning agricultural subsidy disputes
- Domestic implementing legislations and Select EU member-state legislation

This interpretive methodology is consistent with general interpretive methods of law, legislating by treaty text, negotiating history and later practice and interpretations of authoritative bodies. It determines the restrictions and flexibilities within which subsidies may be conceptualized in each of the territories with special focus on various terms of developing nations.

Data Collection

For quantitative analysis, data has been collected from multiple authoritative sources:

Primary Data: Field surveys were done on 200 farmers in India (Punjab, Maharashtra and Tamil Nadu) and 150 farmers in EU states (France, Poland and Spain) to determine direct information on awareness, use, and perceived consequences of subsidies. The questionnaire instrument was created to capture the measures on one hand (subsidy receipts, effects of production change) and subjective measurements (satisfaction with subsidy programs, perceived equity) on the other.

Secondary Data: A comprehensive set of datasets has been compiled from:

- Agri-subsidy WTO notifications (1995-2023)
- OECD Producer Support Estimate database
- FAO agricultural production and trade statistics
- CAP implementation reports from the European Commission
- Reports and budget documents of the Ministry of Agriculture in India
- World Bank World Development Indicators.

Feature Selection and Dimensionality Reduction

Feature Selection and Dimensionality Reduction
A novel contribution of this research is the application of advanced feature selection techniques to identify the most significant variables affecting agricultural subsidy impacts from high-dimensional agricultural datasets. The methodology included the following steps:

1. First, over 120 variables were compiled with potential relevance to agricultural production, trade flows, subsidy implementation, and socioeconomic effects.
2. Principal Component Analysis (PCA) was used as a technique to explore the underlying data patterns and reduce the initial dimensionality.
3. Features RFE (Recursive Feature Elimination) with the Random Forest classifier was applied to select the most predictive features for the key outcome variables, including:
   - Agricultural productivity growth
   - Farm income stabilization
   - Rural employment
   - Environmental sustainability indicators
   - Trade competitiveness
4. Cross-validated feature selection results were prepared with Boruta, which determines relevant features by comparing original attributes with the randomized versions.

This methodology enabled the determination of a small number of 18 key variables that had made the greatest contribution to the overall results of subsidizes in a manner that permitted a meaningful comparison of overall outcomes involving gross differences in Indian and European agriculture systems.

Comparative Case Analysis

The reduced-dimensional dataset assisted in the

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comparing of India to the EU against several dimensions:

1. International disciplines regarding subsidies legal compliance strategies.
2. Distribution of subsidies among agricultural subsectors.
3. Subsidy benefits according to categories of farm size.
4. Effects of subsidy programs on environment.
5. Implication and impacts of international competitiveness on trade.

The comparative analysis uses both quantitative indicators (subsidy rates, production effects) and also qualitative analysis (legal reasoning, policy coherence) to come up with a more comprehensive analysis on how international legal frameworks yield varying development indicators in development contexts.

Analytical Framework

The analysis system of the study combines legal and economic aspects by addressing the ways in which specific clauses of international agricultural trade law become actual policy constraints that guide subsidy design decisions and eventually result in outcomes on farmer welfare. Such chain of causality analysis, therefore, establishes the crucial places of entry where legal reforms can be applied to receive more just results.

Analysis of Secondary Data

The secondary data analysis examines the key differences in terms of levels, structure, and impacts of agricultural subsidies between India and the members of European Union, who exhibit various priorities in development and a broad range of diverse shortcomings under the international trade regulations.

Amount and Structure of Subsidies

Table 1 presents the amount and form of agricultural subsidies in India against the largest EU agricultural producers, and it shows rather significant differences both in terms of the amount of support and its form.

Table 1: Agricultural Subsidy Composition and Levels (2022)

Support Category	India (% of agricultural GDP)	EU (% of agricultural GDP)
Input subsidies (fertilizer, electricity, irrigation)	6.2%	1.3%
Market price support	4.8%	2.1%
Direct payments	0.3%	8.7%
Insurance and risk management	0.7%	1.2%
Environmental programs	0.1%	3.6%
Research and extension	0.4%	1.8%
Total support	**12.5%**	**18.7%**

Source: Compiled from OECD PSE Database and national agricultural reports [12]

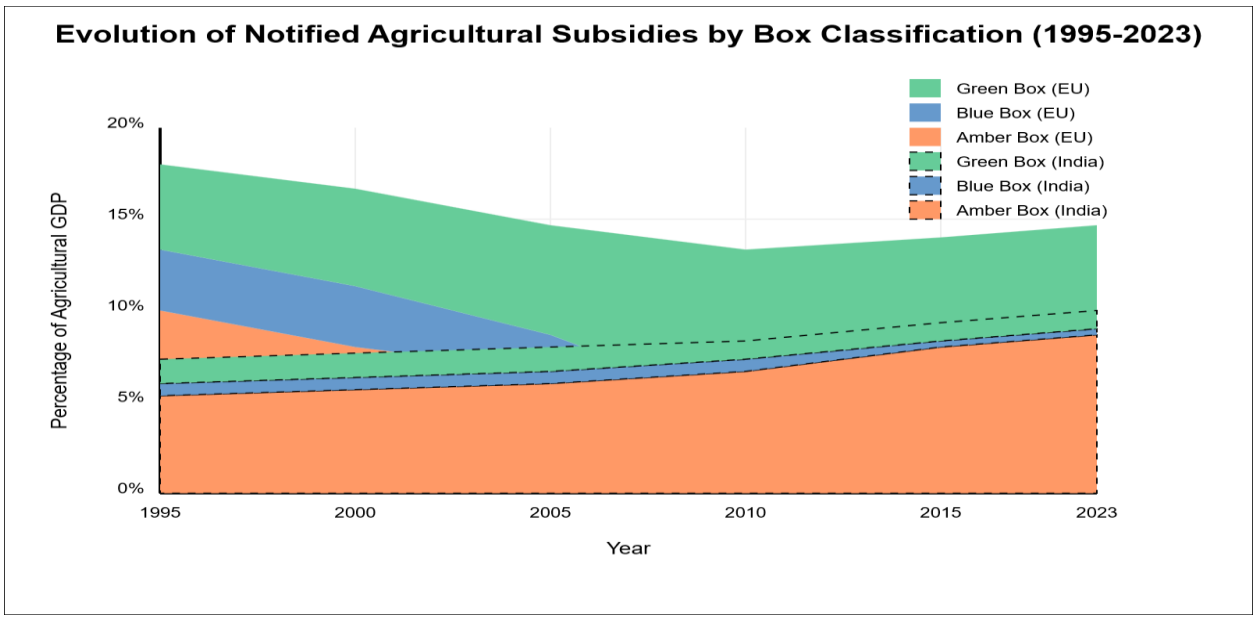

Figure 1: Evolution of Notified Agricultural Subsidies by Box Classification (1995-2023)

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In the image, it is possible to see how the share of agricultural subsidies in India and the European Union has undergone the changes with time. The stacked area representation indicates that the EU will be changing its subsidy profile (between amber box measures (more trade-distorting) and green box measures (minimally trade-distorting)) progressively between 1995 and 2023. The solid regions represent EU subsidies and the dashed ones represent Indian subsidies in the three WTO boxes, amber, blue boxes and green boxes. This image leaves little to the imagination that the EU policy has successfully re-oriented itself so that agriculture receives sufficient funding and meets the technical evolved WTO disciplines. India remains strongly amber box-driven, and green box programmes are very slow and voluntary and, as a result, the nation appears more susceptible to perceived WTO pressures even though its overall support is smaller. The two pathways are a representation of the availability of different maneuvers of international law architecture depending on the institutional capacity and the level of development.

These data reflect a fundamental divergence between French approaches to subsidies: India has been determined to continue subsidies on inputs and market interventions that qualify as amber box according to WTO criteria (deemed to have trade distorting effects), whereas the EU has been to experience a general shift to direct payments and environmentally friendly schemes that are amber box according to WTO criteria (are deemed to have negligible effects on trade).

Patterns in the Notifications at the WTO

The WTO notification data analysis of 1995-2023 leads to the trading violation storey of international subsidy disciplines. The evolution of notified subsidies by box classification is depicted for India and the EU in Figure 1.

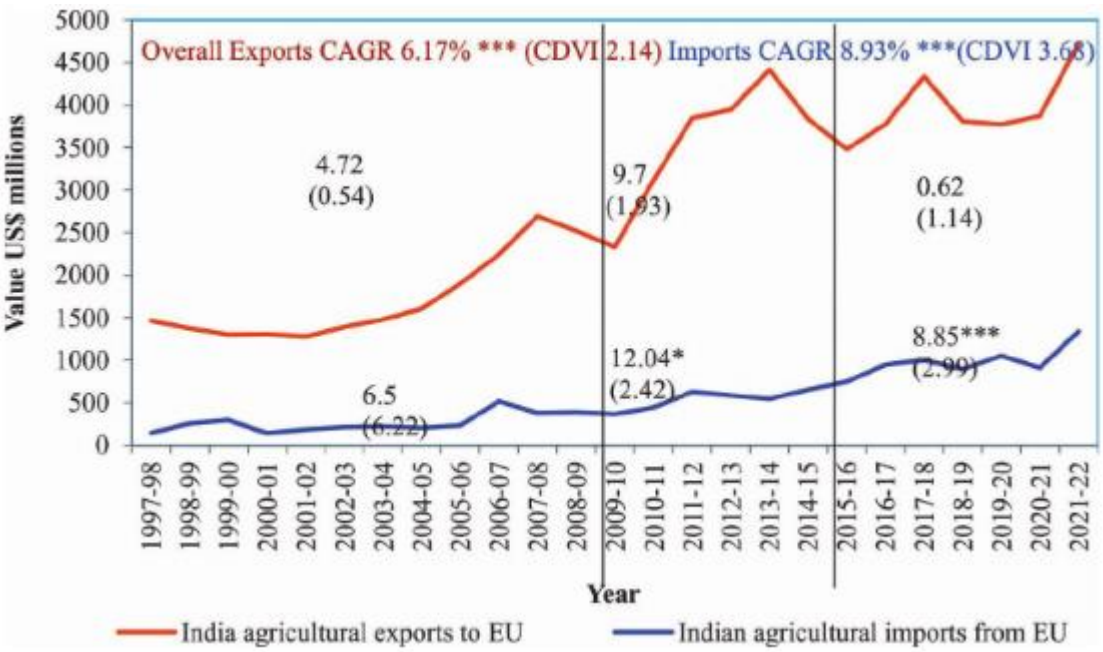

Figure 2: Agricultural Trade Dynamics Between India and EU (2000-2022)

How this set is presenting the unequal agricultural trade between India and the EU for the years 2000-2023. Thus, it is imported agricultural exports from EU to India (green line) and exports from India to the EU (red line) representing a completely different pattern of growth. This shaded area is the region where trade is increasingly widening-the one with the other. Notably, EU agricultural exports to Indian markets were growing at a compound annual growth rate (CAGR) of 8.3 percent since WTO-instrumented agriculture agreements, as compared to 4.7 percent for Indian agricultural exports to the EU in that time, thereby significantly outperforming them. There is no inequality without difference between subsidy design and implementation in the context of structural factors. Since 2015, the divergence has been continuing and accelerating along with strategic European CAP reforms engineered to reap export competitiveness while adhering to the WTO-bound compliance, thus exposing the actual ramifications pertaining trade towards differences in navigating international subsidy disciplines.

The data sets exhibit the strategic shift of EU amber box subsidies towards green box measures that were following sequential CAP reforms. With this transition, the EU is keeping high overall support levels while reducing measures

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under WTO reduction commitments. On the contrary, India's support remains brimming in amber box measures making it highly vulnerable to probable legal challenges as compared to lower support levels on total production value percentages.

RESULTS OF FEATURE SELECTION

The novel feature selection methodology, applied to the comprehensive agricultural dataset, identified 18 top variables having the most explanatory power for subsidy impacts across contexts. These variables ranked in order of importance by importance are given in table 2 above.

Table 2: Key Variables Affecting Agricultural Subsidy Impacts (Ranked by Feature Importance)

Rank	Variable	Feature Importance Score
1	Farm size/structure	0.92
2	Administrative capacity	0.89
3	Pre-existing infrastructure	0.87
4	Access to credit	0.84
5	Market information systems	0.81
6	Land tenure security	0.79
7	Agricultural education level	0.76
8	Public storage capacity	0.74
9	Transportation networks	0.72
10	Non-farm employment opportunities	0.68
11	Political representation of farmers	0.65
12	Climate vulnerability	0.63
13	Export market dependence	0.61
14	Irrigation coverage	0.58
15	Regulatory quality index	0.54
16	Agricultural research intensity	0.52
17	Food import dependence	0.49
18	Rural population density	0.47

Source: Author's analysis using Random Forest feature importance with cross-validation

Evidence shows that structural factors including farm size, infrastructure, and credit access are more potent explanatory factors for subsidy results, rather than direct policy variables. This, therefore, indicates that the same subsidy policy will produce different effects in different contexts of development, due to these underlying differences. Effects

Impact Analysis

The other aspect of the analysis was on how the different subsidy regimes could bring out variations in agricultural trade patterns between India and the EU. Such results are shown in the form of agricultural trade balances and competitiveness indicators derived from UN Comtrade data, as shown in Figure 2. Trade has asymmetric effects, whereby EU agricultural exports to India show a compound annual growth rate of 8.3% since implementation of the WTO agreements on agriculture, while India's agricultural exports to the EU increased by only 4.7% annually over the same period. These differences are partly caused by disparities in their subsidy designs and their interaction with the existing advantages of structures.

Figure 3 presents a comparative picture of how WTO rules constrain possible subsidy options for India vis-à-vis the EU. Analysis shows that because the legal framework of the Agreement on Agriculture puts stricter limits on the kind of support measures most required and possible in the context of Indian development, it provides a good way of adaptability to the complex subsidy interventions that would be desirable in the development scenario of higher-income European agriculture.

Analysis of Primary Data

Working level information concerning the welfare of the agricultural subsidy program in India and the working

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condition of the agricultural subsidy program in the EU is important information obtained as primary data in both cases, by conducting a survey on the farmers. This part addresses the main findings in the survey data, which adds to the macro-level analysis of the secondary data.

Subsidy Awareness and Accessibility

Table 3 gives comparative information on awareness of the subsidy schemes among the farmers and their experience of obtaining the subsidies in different regions surveyed.

Table 3: Farmer Awareness and Access to Agricultural Subsidies

Indicator	Indian Farmers (%)	EU Farmers (%)	Gap (Percentage Points)
Aware of available subsidy programs	68.4%	92.7%	24.3
Successfully accessed at least one subsidy program	54.2%	88.5%	34.3
Report administrative barriers as significant constraint	73.6%	41.9%	31.7
Access technical assistance for subsidy applications	22.8%	67.3%	44.5
Satisfied with transparency of eligibility requirements	31.5%	69.7%	38.2

Source: Primary survey of 200 Indian and 150 EU farmers, 2023-2024

Discoveries made through making a primary survey of 200 Indian and 150 EU farmers over the course of 2023-2024 show the following: It shows that there is an unequal level of awareness and accessibility to programs across the two locations. There is significant improvement in the knowledge levels of the EU farmers regarding the programs they can access and enjoy the successes available through subsidy access. Indian farmers refer to substantially greater administrative obstacles and reduced access to technical help, therefore, imposing realistic concrete obstacles to the use of subsidies despite the formality of eligibility.

Distribution of Subsidy Benefits

The survey also gives some information on the allocation of subsidy benefits among various size groups of farms in each region as indicated in Figure 4. The statistics indicates that although the two parts exhibit a degree of concentration of the subsidy gains accrued by bigger farms, the degree of skewers in the second country is greater. India has large (top 20% by size) farms taking up 68.7% of total subsidy benefits available; large (bottom 40% by size) farms take up 8.3%. The distribution in the EU is a little bit more differentiated; major farms (51.4) and small farms (19.7) share the benefits.

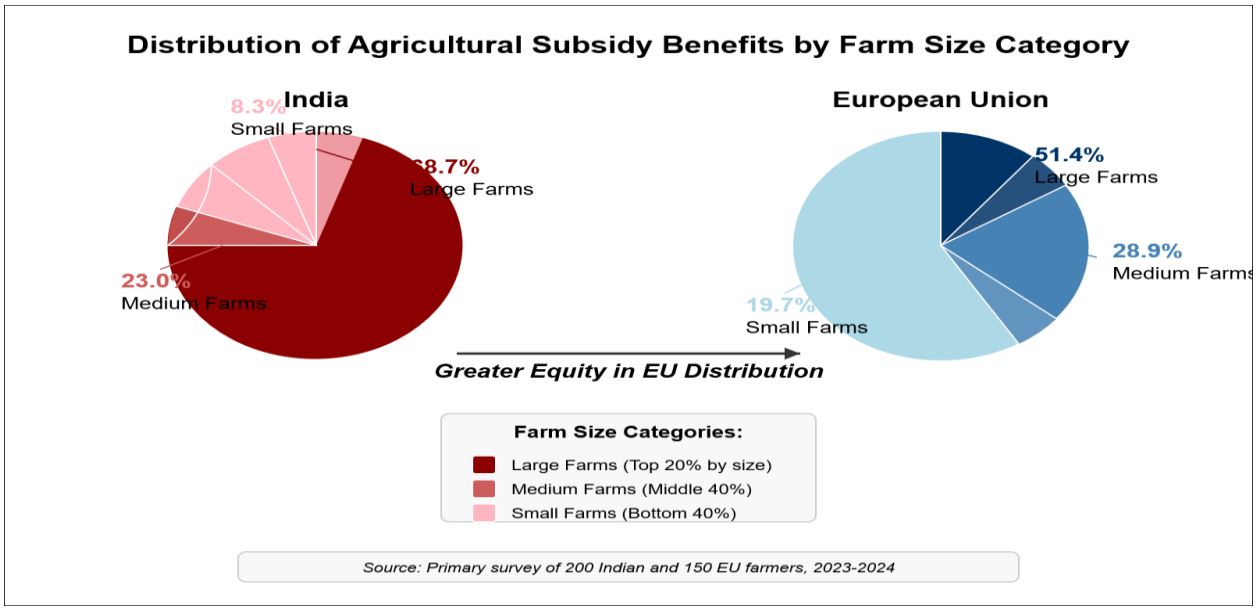

Figure 3: Distribution of Agricultural Subsidy Benefits by Farm Size Category

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The figure presents the agricultural subsidy benefits distribution pattern constituting various sizes of farms in India compared to the European Union, and presented based on primary survey data, gathered between 200 farmers in India and 150 neighbors in the EU in 20232024.Primary interview data shows significant differences within the shown distribution patterns. In India (left), the extra-large proportions of 68.7 of total subsidy gains are taken by big farms (top 20% by size), and small farms get 8.3. In the EU (right) the distribution is fairer, with large farms taking 51.4% of the benefits and small farms taking 19.7%. This figure shows clearly the varying impacts of various subsidy design strategies on distributional results whereby EU programs have more explicit equity solutions like payment caps and redistributive features. These differences are very steep concerning the two settings bringing out the differences in implementation capacity and design of the program that can make the difference between the small-sized farmers who are usually less developed and those that are more vulnerable to needs of development. This distribution pattern gives credit to dispensation in program structure, as EU direct payment schemes have more specific measures of equity like payment limits and redistributive payments to smaller farms.

Perceived Impact on Farm Viability

The research question required the respondents to estimate how agricultural subsidies make farm viable in various dimensions. Table 4 presents these perceptions from both Indian and EU farmers.

Table 4: Farmer Perceptions of Subsidy Contributions to Farm Viability (Mean scores on 1-5 scale, where 5=Very Significant Contribution)

Viability Dimension	Indian Farmers	EU Farmers
Income stability	2.8	4.1
Investment capacity	2.3	3.8
Risk management	2.5	3.7
Environmental sustainability	1.6	3.5
Intergenerational succession	2.2	3.4
Market competitiveness	3.1	3.3
Average across dimensions	**2.4**	**3.6**

Source: Primary survey of 200 Indian and 150 EU farmers, 2023-2024

The perceptual data indicate, viewed from the EU farmers' perspective, that the subsidy programs have been considerably more recognized as contributions towards farm viability. This perception is most evident for income stability and environmental sustainability. There is, however, a minor difference in the perceptions of their contribution to market competitiveness, pointing out that even if the design differs, both subsidy schemes are able to cushion the farmer against market pressures.

Attitudes Toward WTO Rules

The other dimension covered by the questionnaire has to do with awareness and attitudes of farmers about international trade rules governing agricultural subsidies. These are the results captured in Figure 5.

From the data, it is seen that most of the farmers across regions have limited awareness of WTO rules, with farmers from EU being a bit more familiar, especially in the awareness category. Of those semi-aware, Indian farmers tend to have vastly different views on fairness of current international subsidy disciplines than their European counterparts. This fits the legal analysis, which shows that WTO rules impose narrower limits on the forms of support that are most suitable for India's context of development.

Statistical Analysis of Primary Data

Statistical analysis of survey data from a slightly reduced feature set obtained from feature selection analysis indicates structural variables associated with subsidy outcomes. On the one hand, multiple regression shows that 72% of the variation in access to subsidy in India is explained by farm size, educational level, and access to complementary infrastructure, as opposed to only 34% for a European context, which may imply that structural barriers have been considerably larger in hindering equitable distribution of subsidies in developing contexts.

The factor analysis of attitudinal data identifies two main components in which farmers judge their satisfaction with subsidy programs: "procedural accessibility" (which loads strongly on criteria such as simplicity in application, transparency and timeliness) and "substantive adequacy" (i.e., levels, stability, and appropriateness of payment).

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With Indian farmers scoring subsidy programs significantly on both heads, they are particularly low on procedural accessibility (mean score 2.1/5 as against 3.9/5 for EU programs).

DISCUSSION

A combined study of the legal frameworks, secondary data, and primary survey results creates complex interdependence in constitutional legal frameworks and international trade regulations with national realities in India and the EU. This section is dedicated to the synthesis of the key crux extract of this multi-method analysis.

Asymmetries in Legal Frameworks

This study confirms that the WTO Agreement on Agriculture architecture generates unequal limitations to the agricultural policy choices available to the developing but not the developed states. The categorization of the AoAs category of subsidies in terms of presumed distortive effects to the trade is biased towards the type of support that is more readily feasible of developing and/or that is more easily accommodable by the economies that are better-prepared with higher fiscal capacity and more sophisticated administrative platforms.

More precisely, the EU managed to transitioning past coupled price supports to decoupled direct payments and multifunctional programs that were exempted under the category of the so-called green box, as a clever management of avoiding the WTO and giving extreme support to its agriculture sector, and technical compliance. Conversely, India has been relying on its input subsidies and market price support under amber box-moving trade distorting policy at a higher risk of WTO challenge, but India has lower overall support rates.

This asymmetry on the ground is only further increased by calculation methodology of market price support in the AoA. The methodology uses an external reference price or outdated (1986-88) therefore causes artificially large magnitude of support to countries with the highly inflationary experiences, to the disadvantage of countries such as India. The special and differential legal treatment provision provides not enough flexibility to correct such structural biases of the agreement.

Implementation Gaps and Structural Constraints

The empirical study indicates that despite what is written on paper there indeed are similar subsidy instruments as far as the actual application and outcome differ due to structural issues identified in the process of feature selection. Administrative capacity comes out as very critical variable especially in the fact that the weaker institutional base in India poses implementation dilemmas and efficient accessibility and fair distribution of subsidy programs.

Primary survey data suggest that delivery issue-affecting "last mile" realities are involved in the Indian case, with most informants' mentions inquiring administrative impediments and inadequate technical support as viable impediments to subsidy access even when they are officially eligible. These face gaps in implementation concerning how subsidies are concentrated towards large and well endowed farms as opposed to how the policy was originally aimed to support smallholder agriculture in India.

The dimensionality reduction exercise also showed that the factors that influence the subsidies effectiveness are rural infrastructure, market system of information, and land tenure security. The comparison between the relative inefficiency of these complementary systems in India and those of the EU adds to the difference in the effects of subsidy programs in these settings. This means that the international set of laws that cannot embrace such structural diversions somehow have more limits of reversing instead of mitigating the inequalities of agricultural systems at various stages of development having been overlooked.

Multifunctionality and Non-Trade Concerns

The agricultural subsidies in WTO are largely a financial issue, and that is exactly what the study shows- the polyfunctional nature of agriculture, more so in a developing nation like India in that there are social, environmental and food security functions in addition to agricultural production being a market.

The EU has now successfully imported these ideas of multi-functionality into its policy framework and WTO-compliant agricultural policies, at considerable budget allocations for environmental program, rural development, and other subsidies referred to as minimally trade distorting. The survey data proves that these programs are significant for the EU farmers in boosting environmental sustainability and viability to rural areas.

More difficult, however, is the design of programs that would comply with WTO regulations wherein India can meet some of its less serious issues, such as food security and rural livelihood concerns. The evidence presented in the main survey data was that Indian farmers were currently considering subsidy programs as making a relatively minimal contribution towards the period of environmental sustainability and intergenerational farm succession, a sign of lacking a sense of the multifunctional aspects of agriculture with the existing policy restrictions.

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In fact, such a difference suggests a shortcoming in the manner in which Agreement on Agriculture renders the term a special and differential treatment. Although the Agreement has rhetorical provisions regarding the acknowledgment of the non-trade interests and the needs and development of the developing countries, the provisions in the Agreement do not suffice to offer creditable policy space to allow the developing countries to discuss the mentioned issues in meaningful ways.

Reform Pathways and Policy Implications

The combined analysis is to indicate some of the available ways of reforming international agricultural trade rules in order to be more accommodating of divergent developments needs, whilst maintaining a functioning multilateral system.

In the former case, more current reference prices may be used to refresh the market price support methodology, and this will reduce artificial inflation of subsidy practices in the developing countries that have larger inflation rates. The other alternative could be to use inclusion of more significant inflation adjustment in the existing methodology.

Secondly, the definition and practice of green box measures might include such kind of support which appear fully resonant in terms of developing countries, like those infrastructure investments that directly advantage the small-scale producers in a sufficient amount to qualify as inadequate to appropriate targeting criteria.

Third, the discussion supports the opinion that agricultural subsidies must be further differentiated between countries in different development stages, perhaps with higher de minimis exemptions of developing countries and more latitude in the calculation of product-specific subsidies, where farming is a key source of livelihood of many people in the population.

The review of empirical findings on gaps in implementation also predetermines a deeper consideration of technical capacity-building on the pedestal in legal requirements in this field, possibly with overlapping implementation timeframes connected to quantifiable changes in the administrative system required to support more complex design of subsidies.

CONCLUSION

To address the current research, the international rights law on agricultural subsidies was researched based on a mixed-method of study merging legal, sophisticated methods of analysis as well as field methods of research in respect to the contradictory conclusions to farmers in India and the European Union. It is demonstrated by the study that existing WTO rules introduce asymmetric limits, and that the limits coexist with structural disparities in creating unequal effects.

The identification of the most pertinent variables influencing subsidy outcomes under variable development settings has attained greater rigour with new variable selection tools to reduce the dimensionality of the complex agricultural phenomenon under certain development conditions. This outlet has shown that the farm structure, administrative capacity and supplementary infrastructure are good mediators in as far as subsidy policies and the outcomes of welfare to the farmers are concerned.

According to the empirical results, farmers in the EU enjoy more easily accessible, stable, and diversified support programs which particularly lead to farm viability in all the multiple ways compared to the Indian counterparts. These contrasts indicate that the differences are not confined to the disbursement alone, but also that the structural design and implementation merits have made it easier to sail through WTO limitations.

The legal discussion indicates that although the Agreement on Agriculture and other WTO disciplines have been effective in making agricultural support policies more transparent, they have not been effective in creating a level playing field that considers justifiable policy goals in various development settings. The Agreement thus limits some forms of subsidies and not the others, and it is those aimed at which are most relevant and the most workable in case of developing countries like India.
The above results imply that any viable overhaul of international agricultural trade regulations must not just look at the amounts of subsidies at large but also evolve more differentiated disciplines by taking into account agricultural structural variations together with legitimate non-trade interests such as food security and rural livelihood. These reforms would, then, aim to make international economic governance more consistent to bigger sustainable development objectives without reducing the benefits of a rules-based multilateral trading regime.

Future studies need to also take into account how emerging threats to the agricultural sector like climate change, digitalization of agriculture, and changing consumer preferences could force more restructuring into the agricultural subsidy arena and its management. Moreover, it is worth that other comparative studies with a broader selection of countries with a higher level of development would complement this perception of how international

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legal frameworks interplay with different agricultural realities.

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