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Analytical Measurement of Economic Freedom to Enhance Agricultural Efficiency: A Developing Country Perspective

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ABSTRACT

This paper reviews on plausible nexus between economic freedom and efficiency of agricultural farms. It appraises the determinants of economic freedom to facilitate resource-availability for building up capabilities among economic agents by enabling them in economic decision- efficient way. Economic freedom leads to optimum allocation of resources by empowering farmers to access the resources. Agricultural sector requires more freedom of choice and opportunities so that farmers can be able to make efficient production decisions. The production decisions and incentives of farming exaggerated by property rights, land reforms and marketing problems formulated under authorities as these rights are the major institutional factors of development. Since the farmers are less efficient to take rational and cost-effective decisions, economic freedom enables cost estimation ability among the farmers provided through research on several management practices required for the adequate production decisions, prosperity and growth of agricultural sector. While evaluating the determinants of economic freedom towards efficiency issues in agricultural sector, the study observed that economic freedom will enhance incentives and promote high returns on productive efforts such as lowering financial burden, technological development institutions, effective legal system and property rights and deployments of the resources from one use to another to obtain optimum value of output.

Key words: Freedom, Labour market, Subsidies, Agricultural efficiency

Economic freedom builds up capabilities among economic agents to take decisions in a better way for the growth and development of the economy. Freedom is provided in the form of autonomy, human rights and civil liberties to increase the potential skills of the people. These rights are the freedoms from any kind of irrational control over the people, and is the most preferred public choice [1]. In this way, economic freedom is anticipated as per ability and capacity to access the options and choices thereby using them substantially [2]. Thus, economic freedom is expanded through favourable socio-economic, technical, financial, legal, business and institutional changes to persuade the incentives, productive efforts and resource-use efficiency [3].

Economic freedom exploring more options to empower capabilities and skills enhances the growth, productivity and efficiency [4-5]. Each new resource has strength to continue

the process of development, prosperity and growth while efficiency distributes the resources at the optimal level [6-9]. These relations have statistically proved with the regression estimates [10]. Keeping strong positive relation among freedom, growth and efficiency, this paper aims to assess the notion of economic freedom to enhance growth and efficiency in the agricultural sector.

In contemporary developing worlds, huge investment is required for agricultural research and infrastructure development, subsidy support is not enough to enhance economic freedom. Due to lack of freedoms and options, farmers are neither capable to enjoy deliberations nor competent to connect with the retailers and food processing units. For this, developing countries need to introduce more institutional reforms, marketing policies, input-output subsidies and trade policy in agriculture. Moreover, the producers' groups, contracts and cooperatives farming are required to access crop specific markets of agri-products. Thus, economic freedom enhances the growth and efficiency of agricultural based middle-income economies by expanding options and opportunities reducing the rural poverty level.

Therefore, economic freedom facilitating the support, subsidies, high wages, employment and better market price of the agri-product improves the capabilities and marketing skills of the connected people. Economic freedom aims to enhance incentives and promote high returns on productive efforts by

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reducing the financial burden, developing research institutions and deploying the resources from one use to another to get the greatest value of output [11]. This paper attempts to explore economic freedom in resolving the agricultural challenges found in the domestic and global markets. In this perspective, the scope of the study is to present economic freedom for the farming sector with special focus on the developing countries.

The remainder of this paper organizes as follows. Next section offers a conceptual review of the framework of economic freedom from developmental perspective, and then appraised its applicability to the agricultural sector. It helps to find the determinants of economic freedom in realizing efficiency of farms involving factors of production. Thereafter, paper offers a pragmatic analysis of key indicators in agricultural sector for assessing economic freedom under a developing country setup. The last section concludes with some policy remarks.

MATERIALS AND METHODS

Determinants of economic freedom in agriculture

This section describes identified determinants of economic freedom to enhance efficiency of the agricultural sector. There are four determinants reviewed in the literature, these are: labour; financial; technical and business freedom. The paper aims to state indicators/sub-components of economic freedom described as follows:

Labour freedom and allocative efficiency

Labour freedom is an important determinant of economic freedom considered to increase opportunities and options of the farm labourers thereby increases farm efficiency. However, monopsony features of the rural labour market limit the expectations of workers. In such a situation, involuntary job loss generally exists at the time of equilibrium [12]. Labour freedom includes land reform, wage rate and rural development policy as discussed below:

Land reform

Land reform is introduced to resolve rural land market issues including property rights, informal farming contracts with the tenants, inadequate amount of lease-in land and security in tenure. Land reform aims to redistribute the ownership rights among the small, marginal and landless resource poor farmers implementing agricultural property rights. It transfers the ownership rights and the rights related to control and usage of land resolving inverse relationship between the farm-size and productivity owing to the fact that small-size farms are more efficient than large-size due to less supervision costs [13]. In developing countries, land reform introduces for several angles ranging from political, social to economic rationale executed to reduce the rural poverty level thereby improves the land tenure system [14]. Thus, land reform providing the opportunities and options to get benefit from property rights increases land rental activities allocating the land across crops and permitting the tenants to coordinate exchange activities for the mutual benefits [15].

The reform has offered exclusive ownership rights to tenants using assets as a binding condition [16]. In this way, reform improves tenancy contacts increasing the bargaining skills of tenants and extract the amount of rent expanding the negotiating capacity of the renters in transactions as efficiency is the difference between pre-determined incentives and rent extraction in tenancy contracts [17]. Thus, labour freedom putting remarkable effects on the farms' efficiency reduces the rural poverty level [18].

Labour wage policy

Wage contracts are fixed payments to labourers given for thoroughly working in farms thereby increases freedom and opportunities while making interlinked transactions and commitments in between the casual workers and landowners giving the job security and real wage benefits [19]. Besides, wage contracts need to explore at the time of sectoral economic transition of the developing countries, however, wage contracts disregards the skills and efficiency of casual labour. On the other hand, minimum wage laws measure the cost of labour in monetary terms paying to the skilled and unskilled labourers [20]. Minimum wage rate enhances labour freedom through improving the labour efficiency [21]. Labour wage contracts and minimum wage laws both make possible the development of labour market using capital equipment and improving the working conditions and real wages [22].

Rural development policy

A development policy implements in farming and non-farming sector to improve the socio-economic quality of life with good health, education and infrastructure within the rural area [23]. Favorable policy increases the rural wages and employment rate giving off-farm job benefits to migrant labourers and affecting incentive to move. In agricultural based developing countries, off-farm sector plays an important source of employment during the slacks of agriculture [24]. It is observed that higher wages and income opportunities in off-farm sector enhance labour freedom [25].

A favourable rural development policy brings options and opportunities for in-migrant and out-migrant workers with larger commuting nearby to get back into the place of residence. In this way, policy increases the movement of workers from rural to rural and rural to urban area for high wage rate and employment as mobility towards the efficient region considered as an alternative choice to labour [26]. These movement of workers improve the employment status of jobless labourers with suitable work somewhere else [27]. Moreover, rural to rural migration for job is a tool to balance the knowledge, skills and structure of nations need to develop the local labour markets and enable to face the productivity challenges of the globalized farming [28]. In this way, the policy has increased the opportunities to access better job scenarios of the rural households [29].

Financial freedom and profit efficiency

Financial freedom is the second important determinant of economic freedom provided to reduce the explicit cost of production giving input-output subsidies and intervening into the financial matters of agriculture thereby increasing profit efficiency of farms. It is reviewed from the literature that stable input-output price policy are monetary reliefs that has affected farm production and investment decisions without worrying about its economic effects as stated below:

Stable input price policy

Input subsidies benefits the farmers in buying inputs at subsidized price. These financial freedoms and opportunities reduce farm input prices making favourable gap among the market price and amount paid by the farmers [30]. Input price policy helps to supply scarce substituted resources [31]. However, corruption or bribe may stop in doing so. In this case, farmers may force to pay higher price after negotiating the bribe bearing the travels and other costs [32].

Product price stability in agriculture

Product price is an unstable and fluctuating factor causes loss to farmers and discourage them to invest in cold storage, inventories and stocks [33]. In this way, price stability has become a major challenge for the policy experts and authorities. Minimum support price ensures the farm revenue keeping profit margin above the adjoining point of costs [34]. On the other hand, procurement secures sales revenue and motivates to take cost-efficient production decision [35]. Moreover, cash grants/transfers recover losses and provide credits at low- interest rate to fulfil the short-term operations of the agriculture [36].

Technical freedom and technical efficiency

Technical freedom focuses on the applied technology, input quality and intensive farming to enhance productivity of the sector. It is required to enhance farm technical efficiency increasing innovations and inventions within the regions and communities. Technical freedom explores new options and opportunities to efficiently utilize the resources. This component of economic freedom resolves food security and sustainability issues developing agricultural research and extension services, intellectual property rights and using information and communication technology discussed as follows:

Agricultural research and extension

Research and extension services enhance technical freedom through embodied and disembodied technical change. Embodied technical change is related with new technique and know-how, however, disembodied is meant to improve the old cultivation practice. Technical freedom persuading farmers to invest on the scarce technical resource gives opportunities to transform a food-importing country into food-secure nation in short period [37]. Moreover, agricultural research is required for region specific technical development in extension services resolving issues related to rainfall uncertainty, irrigation lacks, and poor infrastructure.

Intellectual property rights

Intellectual property rights (IPRs) implement to control the monopoly over the profitable use of innovative idea and creativity. IPRs develop to stop the imitation of original ideas in the market thereby needs patents, plant breeder's rights, geographical indications, trademarks and trade secrets [38]. In this way, IPRs aim to upgrade the agro biodiversity level of farming replacing the local and traditional cropping methods of cultivation with high yielding modern technique [39]. Technical freedom gives options to the developing countries to strengthen the conventions of biological diversity for improving the health of human being, animal and plants as it comprises legal requisite to direct nationwide policies sharing the benefits of biodiversity and genetic resources equally. Most of the developing countries consider these rules to secure biodiversity diffusing skills and knowledge of specific plant breed and animals [40].

Mass media in agriculture

Print media gives farm technical information through newspaper, magazines, booklets, newsletters, etc. thereby spreading the knowledge in every nook and corners of the world, whereas electronic media broadcasts information through radio, television, internet, computer, etc. [41]. Mass media enhances the transfer of technology to provide precarious services, updated technique, weather forecast, market fluctuations, draughts, crop disease information, etc.

[42]. In this way, it spreads technical freedom and options to facilitate communication and information required to access a suitable farm technology and practice thereby benefitting the farmers with income-generating opportunities. Thus, digital information and options provides technical freedom and assists farmers notifying the plans and limits of farming promoted using mobile phones and internet services at fast rate [43].

Business freedom and marketing efficiency

Business freedom increases the marketing and scale efficiency of the agricultural sector thereby removing complications related to trade and transactions at domestic and international boundaries. Business freedom expands the options and opportunities of agribusinesses for farmers, traders marketing middlemen, and agro-processing units implementing liberal trade and protection policies as discussed below:

Trade liberalization of agribusinesses

Business freedom comprises liberal trade policies to integrate farm production into the global market keeping easy clearance, efficient customs, and low tariffs and non-tariff barriers. Liberal trade policy makes the product less competitive across the nations [44] thereby achieving food self-sufficiency targets in the agriculture based developing countries [45] whereas strict trade rules discourage optimal production and cut the comparative gain to be remained in the business.

Trade liberalization include market access and marketing policies to enhance agribusiness resolving the transaction issues related to the sale in the open market. In this way, marketing policy aims to increase marketing efficiency of specific crop allotting land for certain time period, it has increased the income of the associated workers reducing the profit margins of the market middlemen [46]. These policies increase demand for agri-products and develop opportunities connecting to nearby 'mandis' through investing more on storage and transport to capture domestic market by reducing tariff and non-tariff barriers. Thus, business freedom includes policy resolutions of marketing issues and market access for the agricultural products.

In the global market, WTO agreement on agriculture has removed the banned and prohibitions on agricultural products. Business freedom changes old policies into tariff or tariffication policy under the agreement on agriculture [47]. Tariff-quotas system comprises low tariff rates of specific amount of agri-products and high tariff rates for quantities that exceeds the quota limit fixed under the tariffication policy. Tariffication is the process of converting the quotas and other tariffs to ensure import of agri-products. Thus, market access policy offers tariff-quotas system to new agri-products to be imported and exported to enhance business freedom for the developing countries.

Protection policy of agricultural businesses

Protection policy provides special safeguards for the products whose non-tariff restrictions are converted to tariffs as special emergency package. Special safeguards offer options to prevent quick fall or rise in the prices of imported agricultural products to safe the farmers. Developing countries can use the option of ceiling tariff rates or bound-tariff as a protection policy, generally need not to cut tariffs in case of agricultural products. There is a differential treatment box for the developing countries under the agreement on agriculture

specifying low rate of protection policies over the tariff and non-tariff barriers [48]. In this situation, business freedom imposes limits on trade of agri-products using protection policy with high tariff and quota barriers. Thus, developing nations fully utilize the production capacity to extend the markets getting economies of scale and to get benefit of free trade areas.

The next section of the paper presents pragmatic approach to assess economic freedom quantifying its impact on farm efficiency. Therefore, the results and discussion section defines the method to measure determinants of economic freedom and its indicators to enhance efficiency of the agricultural sector, described as follows:

RESULTS AND DISCUSSION

Pragmatic approach to measure economic freedom in agriculture

The paper enables to identify determinants of economic freedom and its various indicators that has affected the

agricultural efficiency. All the indicators are qualitatively ranked by the response defined against each indicator of the respective determinant of economic freedom on a four-point assessment scale in an ascending order varied from 1 to 4 stating (1) for negligible freedom, (2) for little, (3) for moderate freedom, and (4) for full freedom to assess intensity of the indicator. The respondents have been asked open-ended questions in yes/no, if no- negligible freedom score is (1), if yes- then the intensity of the indicator is evaluated into four-point valuation scale and the qualitative scores are measured to arrive at average score of each determinant of economic freedom for four categories of farms; medium, small, marginal and landless of each village giving equivalent weightage in the primary survey. The assessment scale has used never, very little, little and high to measure the response of labour freedom in agriculture (Table 1); never, rarely, often and every time to assess financial freedom (Table 2); always, most of times, sometimes, and rare to define the extent of technical freedom (Table 3); and always, most of times, sometimes and rare to quantify business freedom (Table 4).

Table 1 Descriptions and measurable variables of labour freedom

Indicators / description		Measurement in four-point assessment scale (yes/no) by asking the farm-labourers
Private property rights	<i>Land reform</i> redistributes the land ownership rights among the small, marginal and landless labourers to enhance labour freedom removing the land inequalities [49].	Have you and your immediate former generation ever benefitted with any piece of land from the institutional reform? If yes, have you had larger land before getting from the land reform? Have you had very little land before getting from the land reform? Have you had little land before getting from the land reform?
	<i>Land rental contracts</i> provide possession of land and improve the bargaining capacity, securing tenure and production rights thereby enhances labour freedom [50].	Have you made any kind of legal/formal land registration with the land rental contracts? If yes, have the land rental contracts disregarded the security of tenure? Have the land rental contracts provided the security of tenure? Have land rental contracts provided the security of tenure and improved the bargaining capacity?
Labour wage policy	<i>Labour wage contracts</i> save time and labour hiring cost and make contracts with workers to confirm their continual supply in essential farm-works [51].	Have you employed on the regular basis in a farm-job? If yes, have farm-job disregarded the security and benefits of real wages? Have farm-job provided the security of farm-job? Have farm-job provided the security and benefits of real wages both?
	<i>Minimum wage laws</i> increase labour freedom paying wages as per the work capacity and skills of labour improving labour productivity to increase the wage payments [52].	Have you ever paid wages as per the minimum wage laws? If yes, have minimum wage payments lesser than the work capacity? Have minimum wage payments equal to the work capacity? Have minimum wage payments as per the work capacity and skills both?
	<i>Labour market reform</i> improves the labour wage rate and working conditions using capital inputs affecting the labour/land ratio thereby enhances labour freedom [53].	Have labour market reforms benefitted you with wage rate and working conditions? If yes, have the labour market reforms disregarded the working conditions? Have the labour market reforms provided the working conditions? Have the labour market reforms provided the good working conditions and improved the wage rate?
Rural development policy	<i>Rural development plans</i> pay higher wages in off-farm jobs and affect the supply of labour for farm-works through increasing rural wage and employment rate and labour freedom [54].	Have the off-farm works benefitted you with the wage and employment? If yes, have you had often wage & employment before getting from off-farm works? Have you had little wage & employment before getting from off-farm works? Have you had very little wage & employment before getting from off-farm works?
	<i>Labour mobility</i> affects the out-migrant and in-migrant workers and the incentives to move through reducing the rural/urban wage and employment gaps as the rural labour market become more fascinated to absorb the excess supply of labour, [55].	Have you found the in-migration of workers for wage and employment in your rural area? If yes, have you had larger wage & employment benefits before in-migration? Have you had little wage & employment benefits before in-migration? Have you had very little wage & employment benefits before in-migration?

Table 2 Descriptions and measurable variables of financial freedom

Indicators / description		Measurement in four-point assessment scale (yes/no) asking to the farmers
Stable input price policy	<i>Input subsidies</i> enhance the financial freedom reducing the explicit costs through making available inputs like seeds, fertilizers, electricity, at reasonable price [56-57]. <i>Substituted inputs</i> replace the subsidized resource and enhanced financial freedom when it is available in the market at low price [58-59].	Have you reduced the explicit costs from the input subsidy? If yes, have you found lack of proper implementation in input subsidy? Have you accessed the input subsidy easily? Have you found stability in the input prices after input subsidy? Have you ever replaced the subsidized input to non-subsidized input? If yes, have substituted input price found lesser than subsidized input price? Have substituted input price found equal to subsidized input price? Have substituted input price found greater than subsidized input price?
Agricultural product price stability	<i>Minimum support price</i> secures the farm revenue against any extreme reduction in market price because of excess supply of output thereafter enhanced financial freedom of the farmers [60]. <i>Procurement's policy</i> includes direct government spending to purchase food grains from the farmers and enhance the financial freedoms by securing the purchases of essential food grains [61-62]. <i>Cash transfers</i> are the government support to recover the losses incurred from the farm production thereby enhanced financial freedom of the farmers [63]. <i>Credit policy</i> in agriculture provides low interest availability of institutional credit required for the farm-work in short period of time, and hence enhanced financial freedom of the farmers [64].	Have the MSP policy ever benefited you in the farm revenue? If yes, have you had larger farm revenue before securing from MSP policy? Have you had little farm revenue before securing from MSP policy? Have had very little farm revenue before securing from MSP policy? Have the procurement policy ever benefited you in selling the food grains? If yes, have you had larger food grains sale before selling from procurement policy? Have you had little food grains sale before selling from the procurement policy? Have you had very little food grains sale before selling from the procurement policy? Have the cash subsidies ever benefitted you to recover losses? If yes, have you found the amount of cash subsidy lesser than losses? Have the amount of cash subsidy equal to losses? Have the amount of cash subsidies higher than losses? Have the credit policy ever fulfilled your short-term requirement of funds? If yes, have you ever found delay in access of funds from the credit policy? Have you found funds available at low interest rate with mortgage? Have you found funds available at low interest rate without mortgage?

Table 3 Descriptions and measurable variables of technical freedom

Indicators / description		Measurement in four-point assessment scale (yes/no) by asking to the farmers
Agriculture research and extension	<i>Embodied technical change</i> focuses on new techniques and new process to increase farm productivity investing on new inputs, plants and scarce technical resources [65-66]. <i>Disembodied technique</i> change upgrades the old cropping method sharing technical knowledge among the farming community thereby increases technical freedom [67-68].	Have you ever increased the agricultural production adopting new technique and developing new process? If yes, have you invested on the extension services of scarce technical resources? Have you invested on new farming plant? Have you invested on new physical capital input? Have you ever improved the quality of production getting technical knowledge from research and training institute? If yes, have you visited to research and training institute for farming issues? Have the technical experts visited occasionally? Have the technical experts visited regularly?
Intellectual property rights	<i>IPRs</i> control over profitable use of innovative schemes through protecting the innovations and creative idea of the farmers used as own innovative traditional knowledge to enhance technical freedom [69]. <i>Biodiversity</i> enhances technical freedom through improving food quality, security and sustainability of agriculture It preserves the farm resources lacking of biodiversity undermines the health and life of human beings, animals and plants [70].	Have you ever applied your own unique innovative traditional knowledge in the farming? If yes, have you disregarded patents of technical farming knowledge? Have you patented the knowledge but not shared with farming community? Have you patented and shared the technical farming knowledge? Have you ever provided enough freedom and choice to maintain the local and regional biodiversity during farming? If yes, have you ever preserved the fertility of soil? Have you ever upgraded the crop quality to secure the health of human beings, animals, and plants? Have you ever used organic farming and pest management?
Mass media in agriculture	<i>Print media</i> diffuses farm communication to understand the farm variety, crop diseases and techniques keeping newspapers, booklets, magazines and newsletters and hence to resolve farming issues [71].	Have you ever accessed and implemented newspapers and magazines to understand farm variety and crop diseases? If yes, have you found awareness of the given knowledge from other source? Have you accessed the knowledge but not implemented in farming? Have you both accessed and implemented the knowledge in farming?

Electronic media provides well-timed farm information bringing income-generating opportunities and freedoms through radio, television, broadcast, phone messages and alerts during the risky and uncertain conditions of agriculture [72-73].

Have you ever accessed well-timed information through radio, television, phone messages and implemented to increase income opportunities?

If yes, have you found awareness of the given knowledge from other source? Have you accessed the knowledge but not implemented?

Have you both accessed and implemented the information?

Table 4 Descriptions and measurable variables of business freedom

Indicators / description		Measurement in four-point assessment scale (yes/no) by asking to the farmers
Trade liberalization for agri-business	<i>Marketing policy</i> provides direct contact with buyers of nearby mandis and online markets minimizing the influence of marketing middlemen. An efficient marketing system provides an expansion of markets and growth to ease agribusinesses [74].	Have e-NAM transactions required to increase the profit margin of selling agri-produce? If yes, have eNAM disregarded to offer better price and reduce marketing commission? Have eNAM offered better price but not reduced the marketing commission? Have eNAM offered better price and reduced the marketing commission? Have the transport and cold storage facilities increased the profit margin of selling the agri-produce offline? If yes, have transport and cold storage disregarded hassle-free transaction? Have you found hassle free transaction but no direct contact with buyers? Have you found hassle free transactions and direct contact with the buyers?
	<i>Market access</i> is the ability of the farmers to fulfil the demand and expand the market at the domestic and global level with the suitable taxes, tariffs, duties, and quotas or non-tariff barriers [75].	Have you found market access of agri-produce by reducing the taxes, tariff and non-tariff barriers (NTBs)? If yes, neither have accessed the market demand nor expanded the agri-business? Have accessed the market demand but not expanded the business? Have accessed the market demand and expanded the market of agri-business?
	<i>Liberal trade policy</i> affects the sale of the product raising the competency level of the product thereby enhances the business opportunities and flow of the agricultural products across the nations with minimum controls [76].	Have liberal trade policy ever improved the competency level of the agri-products minimizing the global challenges faced at the international market? If yes, have you found agri-products less competent at the international market? Have you found improvement in the competency level of agri-products? Have you found improvement in the competency and global challenges?
Protection Policy	<i>Food self-sufficiency and security</i> is the region-specific policy choice of the government raising the tariff and non-tariff rates to achieve food security and self-sufficiency target in the agricultural based emerging economies [77-78].	Have Protection policies required to achieve food security and self-sufficiency targets in the agricultural based emerging economies? If yes, have protection policy disregarded the food security nor self-sufficiency? Have you found food security targets in the protection policies? Have you found both food security and self-sufficiency targets? Have quality control measures of protection policy found effective to secure food for the future? If yes, have quality control measures disregarded the hunger & sustainability issues? Have you found higher food grains supply at higher price domestically? Have you found higher food grains supply at lower price domestically?

CONCLUSION

While evaluating the determinants of economic freedom towards efficiency issues in agricultural sector, the paper observe that economic freedom enhances incentives and promote high returns on productive efforts. Economic freedom enables cost estimation ability among the farmers thereby provides research on several management practices required for the adequate production decisions, prosperity and growth of the sector. In this way, economic freedom measures capabilities of the farmers quantifying positive and negative notions to give the options and opportunities that are most accessible to them. The paper has suggested the policy makers

to develop specific indicator of economic freedom that is significantly required to enhance the agriculture efficiency. The production decisions and incentives of farming exaggerates with property rights, land reform and marketing policies thereby removing the major institutional barriers on the way of development.

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Conflicts of interest

The study does not have any conflict of interest to declare.

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