Discussion on Tea and Coffee Planting in Lam Dong and Thai Nguyen Provinces in Vietnam - FDI Investment, Economic Values, Natural Conditions, Farming Techniques for Agricultural Sustainability

Nguyen Dinh Trung[1], Dinh Tran Ngoc Huy[2], Nguyen Kim Phuoc[3], Pham Van Hong[4], Le Thi Thanh Huong[5], Tran Duc Thang[6], Nguyen Thanh Hoang[7]

[1]National Economics University (NEU), Hanoi Vietnam . Email: trungnd@neu.edu.vn

[2]Banking University HCMC Ho Chi Minh city, Vietnam - International University of Japan, Niigata, Japan. Email: dtnhuy2010@gmail.com. ORCID: 0000-0002-2358-0699 (corresponding)

[3]Ho Chi Minh city Open University, Vietnam . Email: phuoc.nk@ou.edu.vn

[4]Thai Nguyen University of Agriculture and Forestry, Vietnam . Email: buithithom@tuaf.edu.vn

[5]Dai Nam University, Vietnam . Email: lethanhhuong@dainam.edu.vn

[6]National Economics University (NEU), Hanoi Vietnam . Email: tranducthang@neu.edu.vn

[7]The University of Social Sciences and Humanities National University of Ho Chi Minh City, Vietnam. Email: hoangnguyenfir@hcmussh.edu.vn

ABSTACT

In order to propose suitable policies for sustainability of coffee and tea in Vietnam, we could perform both qualitative and quantitative analysis. We analyze tea and coffee planting in Thai Nguyen, Lam Dong and Daklak provincies in Vietnam where are biggest locations.

In this study, we used an econometric model to suggest suitable policies to be in favor of tea export price.

The study results show that although long years with experiences in planting coffee and tea crops, The area, productivity and output of coffee all decreased compared to 2019 and did not meet the plan. The reason is that some areas of re-cultivated coffee have not yet been harvested and converted to effective crops such as vegetables, flowers, etc., and at the same time, due to low coffee prices, people's investment in caring for gardens is limited. Next in a five factor model regression, we find out a reduction in exchange rate and CPI while increase in VNIndex will be in favor of tea export price. And correlation between exchange rate and tea price is higher than that between VNIndex and tea price.

Last but not least, Limitation of our research is we can expand research model for other agricultural products as well.

Keywords: tea and coffee crops, planting, value chain, marketing solutions, econometric, tea price, SWOT

JEL: M21, G30, G32, G38

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1.INTRODUCTION

Lam Dong and Thai Nguyen provinces are two biggest tea planting locations where there are suitable natural conditions and climate change. Whereas Daklak, Tay Nguyen are big locations for coffee crops and planting.

There are some benefits of green tea:

Tea also helps you lose weight effectively. One of the benefits of tea is that it boosts metabolism and burns fat. According to a study, drinking tea every day will help you reduce 75-100 calories per day. Green tea contains less caffeine than coffee but enough to keep you awake and improve brain function.

Next drinking coffee have benefits:

Studies have shown that coffee brings more benefits every day than people imagine. Coffee is full of substances that help protect against common health problems, especially in women, including Alzheimer's disease and metabolic cardiovascular diseases including hypertension, coronary heart disease, dyslipidemia...

Many people will immediately think of caffeine when talking about coffee, but that's not the only thing that exists in this top popular beverage. Coffee contains many antioxidants and compounds with anti-inflammatory as well as disease-fighting properties. This assertion has been confirmed by leading experts and professors of the Johns Hopkins University School of Medicine. In addition, studies also show that people who have the habit of enjoying a cup of coffee every morning have a much lower risk of some serious diseases than those who do not have this habit.

(source: vinmec.com, access date 22/12/2021)

Related to FDI investment into coffee crops:

In Daklak, The construction of coffee processing factories, besides improving product quality and value, also forms direct purchasing points, limiting intermediaries, contributing to reducing economic losses for coffee growers. However, the number of coffee investment projects is still not much; Only a few enterprises are capable of processing high-quality coffee, the rest are mostly small-scale establishments, unsynchronized equipment lines, and deep processing accounts for about 2.3% of total output. export coffee. In addition, FDI projects have large scale in terms of capacity and investment capital, but the number is small, while domestic investment projects are larger in number but limited in operational capacity. The reason for this situation is that coffee processing requires large capital (average investment of roasted coffee is about 15-17 billion VND for a capacity of 1,000 tons/year; for instant coffee, it is 150 billion VND for a capacity of 1,000 tons/year. capacity of 2,000 tons/year), so it is difficult for domestic enterprises with financial disadvantage to compete in long-term investment with foreign investors.

The land is still fertile

According to experts in the coffee industry, FDI investment is still limited in number because countries previously only imported Vietnamese green coffee as raw materials and protected the processing stage in their countries. Therefore, Vietnamese roasted and ground coffee products are often subject to 20% tax when exported to those countries. However, recently with the participation in free trade agreements, the tax rate has been reduced to 0%, which has created great opportunities for foreign enterprises to invest in deep processing of Vietnamese coffee to fully exploit local resources of raw materials and labor.

(source: baodaklak.vn/channel, access date 23/12/2021)

Research question:

What are factors influencing tea export price and policy implications for agri sustainability?

What are real situation of tea and coffee planting in Vietnam?

2. LITERATURE REVIEW

First, Dinh Tran Ngoc Huy et al (2021) stated we need to develop Sustainable Agricultural Value Chain in Coffee and Tea Crops in the Northern Regions of Vietnam. While Huy, D.T.N (2015) stated many solutions for better business management in the field.

Currently we need to improve coffee planting field. To acquire coffee raw materials, FDI enterprises in Dak Lak only export raw coffee with low technological content and low added value.

Next we can summarize related studies in below table:

Table 1- Previous studies

Authors	Year	Content, result
Jolliffe et al	2010	International Tourists have experience with Vietnam coffee
an et al		
Nguyen Thi Thao		
Guo & Rato	2019	Experience-based tea culture tours in Thai Nguyen are becoming popular, mainly among foreign tourists seeking knowledge and beautiful scenery. The tea culture destinations and the tour packages provide sightseeing as well as opportunities to try tea-related activities, such as harvesting, production, and tasting. This article suggests that tea culture tourism in Thai Nguyen is developing quickly as a multilevel tourism form combining scenery sightseeing, learning, and hands-on experiences
Dinh Tran Ngoc Huy et al	2021	We need marketing solutions in agri products (coffee and tea)
Bui Thi Suu et al	2021	We can use insect alcohol traps instead of chemical pesticides in coffee planting
Hoang Quoc Tuan et al	2021	Compositions of fatty acids and amino acids compound were investigated in coffee beans included Arabica and Robusta cultivars grown in three region of Vietnam

(source: author synthesis)

3. MATERIALS AND METHODS

This paper uses 2 approaches: first is value chain approach in agriculture, and second is sustainability approach in agriculture

Hence, authors also use econometric model to estimate effects of macro factors on price of tea for a sustainable suggestions.

Beside, the study also analyze and compare previous related studies.

Last but not least, for qualitative approach authors use inductive and synthesis methods.

Finally, authors construct an econometric model for tea price as follows:

Y = f(x1,x2,x3) where y : price of tea (export), x1: x2: x3:

4. RESULTS AND DISCUSSION

4.1 Area, production and distribution of tea crops in Thai Nguyen region

Vietnam has three famous tea growing regions: Northwest, Thai Nguyen and Lam Dong. With suitable soil conditions, Thai Nguyen has long been famous for its vast green tea areas.

There are quite a few different types of processed tea that establishments/cooperatives process from different types of products from the general to the special ones. Selling prices of different products

quite big difference. To make this difference, the input material (fresh tea) must

are carefully selected, classified and the technique/know-how of tea copying/drying are the most important to create a private brand.

For special tea, the selling price and profit are much higher than pine dry tea

usually. However, this type of tea has a very small yield (accounting for only 3-5% of total tea production).

output). These teas are usually ordered by customers to be used as gifts or sold to high-income people.Cost and benefits of export processing enterprises

Only tea processing enterprises have the capacity to participate in exporting. There are two main groups of products that enterprises export: raw tea (exported to Pakistan, Sri Lanka, etc. let them process black tea, dip tea, ..) and dry green tea. In fact, the volume of tea exporting enterprises in the province is still very limited.

There are many different reasons leading to this situation: first, exporting finished tea to developed markets, despite high profits, is very risky. Because the importing countries have very strict regulations on the content of residues of chemicals and pesticides, if they take samples for testing but fail to meet the requirements, the loss to enterprises is huge. Meanwhile, enterprises do not have enough material areas to meet the requirements due to lack of land or limited linkages with farmer households. Second, for the group of tea raw materials for export, the profit is very low due to the low selling price, so businesses do not pay much attention. Third, a number of other deeply processed products such as matcha tea, tea bags, etc., enterprises in the province have not yet created a brand name in the international market, so their competitiveness is still low. Fourth, trade promotion in developed countries' markets is still limited due to costly costs.

As a result, there are not many enterprises focusing on export processing, but mainly focus on exploiting the domestic market, where tea consumption is still relatively easy and not costs and risks compared to exporting (chemical testing, customs, research market research,...)

Cost and benefits from exporting finished products of processing enterprises (premium tea)

Obviously, export tea brings the highest selling price and profit for the whole business processing and tea growing households. Specifically, the selling price and profit from exporting dried green tea of the same type sold in the domestic market from 1.5-2 times. However, the export output is still very small compared to the total tea output of the province due to difficulties in linking to ensure the material area meets the standards. To ensure quality, businesses rent land for their own material areas or cooperate with tea growing households and control the care process. However, due to weak linkages and limited area, the raw material area to meet export requirements is still difficult.

Furthermore, processed tea products such as tea bags, matcha tea and tea products are still limited, have not yet created reputable brands in other developed markets. Even in the domestic market, these products still cannot compete with imported products (such as British lipton tea, Sri Lankan Dilmad tea or Japanese matcha tea).

Cost and benefits from exporting raw tea of enterprises (Firm=>exporting to Pakistani countries)

Raw tea is usually prepared from old tea leaves after tea buds (fresh tea) are processed households that harvest or have poor quality tea materials are collected, preliminarily processed, and exported to other developing countries such as Pakistan so that they can process other finished products for export. The export price for this type of tea is quite low, only from 1.5 to 2 USD/kg. Due to the low selling price, the profit from this tea is also quite low, the profit is only 10-15 thousand VND/kg.

Positives and limiting factors for tea products to enter the international market

The positives/advantages of entering the market

Natural and climatic conditions for tea plants: Thai Nguyen has favorable natural conditions for tea plants, especially tea varieties imported from Phu Tho province, also known as Trung du tea. If the suitable temperature conditions for tea plants to grow are in the range of 22oC-28oC and the humidity reaches 80%-85%, the average annual temperature and average humidity of Thai Nguyen are quite ideal. are 25°C and 81.2% respectively. The average annual rainfall in the province is about 2,000-2,500 mm, concentrating from May to October. Therefore, Thai Nguyen's tea plants, especially Tan Cuong tea, often grow and develop the best. in summer (May to July) thanks to enough sunshine, enough temperature and enough water. Tea buds at this stage also develop the strongest and have the most nutrients. As a result, the Midland tea tree grown in Thai Nguyen grows better and gives a more distinctive and delicious flavor than tea of the same type grown in Phu Tho.

Tea growers have many years of production experience: With the experience and techniques of growing and processing tea accumulated over a century of history, tea trees were planted from the original purpose of planting to cover bare lands and hills. bald, has now become a strength and is one of the strategic crops of Thai Nguyen province. Up to now, tea trees have been planted in all 9 cities/districts/towns of the province with the total cultivated area continuously expanding over the years. In 2018, the province's total tea cultivation area reached 22,027 hectares, accounting for about 14.3% of the total cultivated area and 57.9% of the total area of perennial industrial crops in the province. Thai Nguyen's tea industry currently attracts the participation of 95,000 households, or 40% of the total number of households in rural areas, including individual producers as well as production households participating in cooperative models. Communes and craft villages (Thai Nguyen Provincial Department of Industry and Trade, 2017).

Gradually change the way of caring for tea plants in the direction of safe products: A survey in Thai Nguyen province shows that the trend of converting conventional tea production to safe tea production is increasingly clear, especially in the past 10 years. this. Safe tea area currently accounts for 80% of the total tea area of the province and about 34% of the total area has been certified to Vietnam Good Agricultural Practices (VietGAP) and other standards, of which has the UTZ Certified Certification Protocol – a sustainable farming program and label that is recognized worldwide. The survey results also show positive changes in the farming habits of tea growers in Thai Nguyen when the use of chemical fertilizers has tended to decrease in the last three years (2016-2018). Specifically, the percentage of households reducing the use of chemical fertilizers accounts for approximately one third of the total surveyed households. The number of households increasing the use of green manure and micro-organism fertilizers accounts for 77.25% and 72.46%, respectively, while the number of households increasing the use of manure accounts for nearly 50%.

Constraints restricting participation in international markets

Small scale production but weak production links

With a large number of farm households engaged in tea production, it is understandable why

The scale of tea production of households is still very limited, although the tea cultivation area in Thai Nguyen province has continuously increased over the years. According to the survey results of the 2018 Project, on average, a production household has only 0.36 hectares, scattered into two or three different plots (maybe near or far from where they live). Even, the average area of each tea growing household in Thai Nguyen province is only 0.11 ha (People's Committee of Thai Nguyen province, 2017).

Moreover, the small size of the area and the lack of concentration of production lead to higher production costs and reduced efficiency. Due to the limited and unsynchronized common irrigation system, households often hire people to drill wells and buy pumps to get water for irrigation without sharing the water source, applying current technology and techniques. It is also difficult because the scale is not large enough. Currently, more than 77% of surveyed households report a lack of water for irrigation, especially during the dry season months (November to April).

Not to mention that in areas lacking electricity connection infrastructure, farmers have to invest in generators to generate electricity to run water pumps. Recently, the manifestations of climate change such as prolonged heat and cold, harmful cold, extreme weather phenomena and the frequency of natural disasters (floods, droughts) are increasing in Vietnam. some places in Thai Nguyen province in recent years. According to the Hydrometeorological Station of Thai Nguyen province; the average annual temperature in 9 districts, cities and towns in the province gradually increased, from 1959 to 2016 it increased by about 20 C; In the last 9 months of 2018 and the first 3 months of 2019, the rainfall is only 66% compared to the average rainfall of previous years.

Climate change affects production and people's lives in many fields and economic sectors. For tea plants, climate change is most evident in the water for tea plants and in land degradation. Drought causes a shortage of water for tea plants. In Tan Cuong commune (especially in Doi Can and Soi Vang hamlets) due to lack of water supply from the irrigation system, people here had to drill deep wells to get water for tea plants. This groundwater is rarely treated, but directly irrigated tea plants, so there is a risk of iron and minerals contamination, affecting the quality of tea.

The effects of climate change must include drought causing land degradation.... Due to this impact, in order to maintain and improve the yield of tea, people have increased the use of chemical fertilizers. study and use of growth stimulants.

Although the area is small, but the linkage in production between households and the link between households and enterprises in production is very weak. The survey results of tea growing households show that the percentage of households participating in the association is still low. quite low, only 1.8% of households in the sample have links with enterprises; 12.57% join cooperatives and 8.98% join cooperative groups. Up to 76.65% of surveyed households do not participate in any type of association. The linkage is weak, the certified and non-certified tea growing households are intertwined and do not form a concentrated production area. Therefore, it is difficult for households to grow according to VietGap, UTZ or organic tea certificates to ensure standards due to the influence of spraying, chemical fertilizers, etc. from surrounding households. Processing enterprises do not have a long-term raw material area, leading to passivity in processing quality management and branding.

Tea qualified for export to developed countries is still limited (most of them have not met the demand from export markets).

Although households are more aware of safe tea production. However, these

This change has not really been well controlled according to international standards. Ratio of tea production area is high, but the number of certified areas is still valid

very small. As of 2017, the area of tea certified according to real standards

Good agricultural practice (VietGAP and other standards) accounts for just over 735 hectares, equivalent to 3.34% of the total tea area of the province. It is worth noting that almost half of this total tea area now has expired certification. The results of in-depth interviews with enterprises show that, if they continue to organize tea production as at present, Thai Nguyen's tea has very little opportunity to expand to developed countries' markets.

(source: Le Van Hung, Pham Van Hong et al., Project, 2019)

4.2 Area, production and distribution of tea crops in Lam Dong region

Lam Dong is a mountainous province in the South Central Highlands, with an altitude of 200-2,200m above sea level. With the tea growing area surpassing Thai Nguyen, the tea area in Lam Dong, tea is considered the main crop in Lam Dong province.

Currently, tea varieties of Lam Dong province for processing account for about 90% of the total annual output, mainly high yielding and high quality tea varieties. The main processed tea products are black tea (11.05%), green tea (1.41%), Olong tea and other tea (87.54%).

(source: yeutraviet.vn, access date 22/12/2021)

Hence, Currently, the total tea area of Lam Dong province is more than 12,400 hectares with an output of about 180,000 tons of fresh bud tea, of which more than 49% of tea is high-tech application, with more than 150 tea processing companies with a production scale of 29,800 tons/year of finished products and 90 tea processing facilities with a scale of 17,400 tons of finished products/year, mainly in Da Lat, Bao Loc and Bao cities. Forestry, etc. Processed products are also diverse such as oolong tea, flavored green tea, preliminarily processed green tea… accounting for 60% of tea output is processed semi-finished products for export, the rest is mainly consumed in Central provinces, including many tea processing factories with modern production lines, have contributed to creating many famous brands for tea products of Lam Dong province.

(source: http://lamdongtv.vn/tin-tuc-n8590/lam-dong-hon-40-dien-tich-che-ung-dung-cong-nghe-cao.html, access date 22/12/2021)

Figure 1- Tea crops in Lam Dong province

(source: internet)

4.3 Area, production and distribution of coffee crops

In 2018, the country's coffee area was very large, about 720,000 hectares. In which, about 670ha Robusta (accounting for 93% of the area), reaching about 1.71 million tons (about more than 96% of output). Arabica coffee, area is 50,000 hectares (just nearly 7%), output is nearly 67,000 tons (only nearly 4%). (the figure is about 70,000 ha higher than the official data).

Table 2- Area and estimated production of Vietnam's robusta coffee

	Robusta coffee	**Area 9 x1000 ha)**	**Quantity (x1000 tons)**	**Productivity (ton/ha)**
1	Daklak	204	490	2.4
2	Lam Dong	164	443	2.7
3	Dak nong	158	417	2.6
4	Gia Lai	91	253	2.8
5	Kontum	17	51	3.1
6	Binh Phuoc	15	23	1.5
7	Binh Thuan	3	7	2.3
8	Dong Nai	11	21	1.9
9	Other provinces	5	8	1.7
		668	1.714	2.6

(source: https://tasacoffee.com/dien-tich-ca-phe-viet-nam-2018.html, access date 22/12/2021)

4.4 Sustainability concepts and value chain in agriculture

A global value chain differs from a value chain in that a value chain can include only a geographical location or even a single company (such as a a plant that is grown, packaged, and consumed only in one country. Meanwhile, a Global value chain can be divided by many different companies and geospatial can be spread across many different countries (Duke GVCC, 2019).

Previously, according to C. Miller and L. Jones (2010), "global value chains are activities that create added value from production to consumption, through processing and commercialization. Each stage of the chain has one or more forward and backward links.

That is, value chains increasingly have a close relationship between each other

stages, between the subjects in the chain.According to Backer and Miroudot (2014), a global value chain defines the full range of activities performed by businesses/participants to bring a product or service from production to the final consumer. together. All advantages such as technology, cost, access to resources have assigned production stages in the chain to see who has the advantage in each geographical area. This assignment helps to increase the efficiency and sustainability of the product chain. For policymakers, global value chains are a good opportunity to capture economic linkages. In particular, it is emphasized that the competitiveness of exported goods depends on an efficient input supply source, and good links between processors and exporters with distributors and final consumers abroad. Therefore, it is really important to specialize in the production and distribution of products in the chain of countries.

Currently, global agribusiness is increasingly dominated by relationship along this value chain. In which, the leading leading companies carry out longitudinal coordination of the chain. In many parts of agribusiness, companies engage in modern manufacturing practices such as promoting innovation and product differentiation, changing the way product quality is controlled based on on inspection and testing by managing risks, controlling production processes and on-time delivery (Humphrey and Memedovic, 2006).

Studies discuss types of linkages such as vertical coordination such as Van Roekel (2002) or Young and Hobbs (2002) to distinguish between extended market relationships or vertically integrated firms. However, there is currently a change in linkages in the agricultural value chain in the form of farming contracts, brand management by supermarkets (Doland and Humphrey, 2004), or linkages in consumption. such as marketing contracts, product sales. Henson (2006) argues that the coordinating role of corporations and large companies in global agricultural value chains is increasing, especially in the field of food, which is mainly distributed. by major retailers.In a nutshell, global agricultural value chains are activities that create added value from production to processing and distribution of products to consumers. The stage in the value chain can be vertically or horizontally linked with together. The subjects in the chain can participate in one or more other stages -each other in the value chain; This depends on the objectives, strategies and participation capacity of those actors.

Basically, the global agricultural value chain is not much different from other countries in global value chains. However, the value chain of agricultural products has some distinctive characteristics that require businesses, farmers and chain stakeholders to have appropriate policies and strategies that will help them participate in the value chain. better global.

Because agricultural products are often seasonal, short harvest time and perishable, requiring competent post-harvest storage and handling and modern technology. Besides, agricultural productivity and output are also easily affected by weather, diseases, and food safety and hygiene. To create brands of agricultural products and participate in the international market, agricultural producing countries need to have synchronization from production, preservation technology, processing, packaging and good branding. . Global distributors and retailers often set their own product standards for their imported products to meet market standards and consumer tastes. These standards must at least pass applicable regulations in the country in which they do business.

Figure 2- Tea harvest in Lam Dong

(source: internet)

4.5 Steps to make good and delicious chicken egg-coffee

A) Egg coffee is made from extremely simple ingredients: fresh eggs, sugar, milk and coffee. With the egg yolks being beaten by hand, together with the talent of the bartender, it becomes a coffee with beautiful foam and a delicious taste that is irresistible.

Ingredients for Egg Coffee For 2 cups

Filtered coffee powder 15 gr

Condensed milk 25 ml

Chicken eggs 2

Honey 5 ml

Hot water

How to choose to buy delicious, standard coffee powder

Good coffee powder will usually be pure coffee powder, roasted and ground from coffee beans and not mixed with other ingredients, standard coffee powders will be less hydrated, so they will not clump, touch. It feels dry and spongy by hand.

To achieve the deliciousness, the coffee must be roasted through 1 burst, so the right coffee will have a brown color instead of a bright yellow like coffees that have not been roasted at enough temperature.

Should choose coffee with reputable brand in the market because it will ensure the quality of the product.

Step 2: Whip egg cream

Separate 2 egg yolks into a cup. Add 25ml condensed milk, 5ml honey. Using an electric mixer, turn on the lowest speed and beat in a certain direction for about 4-5 minutes until the egg cream mixture turns bright yellow. When picking up the whisk, the mixture flows downhill.

Step 3: Egg coffee

After the coffee is extracted, take the filter out of the mouth of the cup. Add the whipped cream and use a spatula to slow the melting of the custard.

Figure 3- Finished product

(Source: author collect)

Sprinkle a little coffee powder on top of the ice cream for a beautiful look. Enjoy while hot!

4.6 Build econometric model for tea crops

We see:

Figure 4- Descriptive data

	TEA_PRICE	CPI	EX_RATE	R	TRADE_B...	VNINDEX
Mean	1645.611	0.039333	2.289778	0.082900	-200.2222	734.7956
Median	1659.200	0.035400	2.292000	0.068100	-200.0000	664.8700
Maximum	1724.500	0.068100	2.323000	0.190000	498.0000	1067.500
Minimum	1515.000	0.006300	2.244000	0.029100	-1162.000	413.7300
Std. Dev.	73.27427	0.018173	0.028060	0.047969	561.8999	242.3730
Skewness	-0.552959	-0.095695	-0.171411	1.370917	-0.177630	0.108642
Kurtosis	2.018611	2.703527	1.764880	3.867829	1.989230	1.413489
Jarque-Bera	0.819817	0.046697	0.616143	3.101543	0.430450	0.961586
Probability	0.663711	0.976922	0.734863	0.212084	0.806360	0.618293
Sum	14810.50	0.354000	20.60800	0.746100	-1802.000	6613.160
Sum Sq. Dev.	42952.95	0.002642	0.006299	0.018408	2525852.	469957.4

(source: author analysis)

Figure 5 - Correlation matrix

Correlation Matrix						
	TEA_PRICE	CPI	EX_RATE	R	TRADE_B...	VNINDEX
TEA_PRICE	1.000000	-0.690199	0.321818	-0.597975	-0.460417	0.223101
CPI	-0.690199	1.000000	-0.181429	0.776208	0.128296	-0.464077
EX_RATE	0.321818	-0.181429	1.000000	-0.331760	0.120374	0.568159
R	-0.597975	0.776208	-0.331760	1.000000	0.232002	-0.671848
TRADE_B...	-0.460417	0.128296	0.120374	0.232002	1.000000	0.445029
VNINDEX	0.223101	-0.464077	0.568159	-0.671848	0.445029	1.000000

(source: author analysis)

Figure 6 - OLS regression

Dependent Variable: TEA_PRICE
Method: Least Squares
Date: 12/23/21 Time: 12:02
Sample: 1 9
Included observations: 9

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	-2913.212	2194.181	-1.327699	0.2763
EX_RATE	623.9376	1117.588	0.558289	0.6156
R	503.8060	1591.159	0.316628	0.7723
TRADE_BALANCE	-0.075007	0.090471	-0.829072	0.4679
VNINDEX	0.069416	0.308078	0.225319	0.8362
C	223.7289	2400.334	0.093207	0.9316

R-squared	0.694397	Mean dependent var	1645.611
Adjusted R-squared	0.185057	S.D. dependent var	73.27427
S.E. of regression	66.14774	Akaike info criterion	11.45638
Sum squared resid	13126.57	Schwarz criterion	11.58786
Log likelihood	-45.55371	F-statistic	1.363328
Durbin-Watson stat	2.639790	Prob(F-statistic)	0.424830

(source: author analysis)

Discussion:

- We find out: CPI and trade balance have negative correlation with tea export price while Lending rate R and exchange rate and VN Index have positive correlation (see figure 6)
- We also recognize: standard dev. Of trade balance and VNIndex are highest values (see figure 4)
- And we see: correlation between exchange rate and tea price is higher than that between VNIndex and tea price (see figure 5)

4. CONCLUSION

SWOT analysis in tea crops in Vietnam

Table 3- SWOT analysis

Opportunities	Threats
- Strengthen technical management, conduct trials to identify new generation drugs, biological drugs capable of preventing tea pests and diseases in order to improve the quality of raw materials in tea growing areas. Building tea production areas applying high-tech agriculture in Bao Loc city and Bao Lam district to reduce costs and increase product value - Lam Dong has been cooperating with international institutes and schools in research and application of science and technology on tea development. In the trend of international integration, Vietnam has signed trade agreements with China since 1991, especially with agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The EU-Vietnam Free Trade Agreement (EVFTA)... is an opportunity to promote the development of the tea industry in Lam Dong province in the coming time.	- The area, productivity and output of coffee all decreased compared to 2019 and did not meet the plan. The reason is that some areas of re-cultivated coffee have not yet been harvested and converted to effective crops such as vegetables, flowers, etc., and at the same time, due to low coffee prices, people's investment in caring for gardens is limited. . According to aggregated results from localities in the province, in 2020, most people will not grow new coffee, but focus on replanting, grafting and improving on coffee areas with low yield and affected by pests and diseases. (source: http://dalatkettinhkydieutudatlanh.vn/vn/ca-phe-arabica/dien-tich-nang-suat-san-luong-ca-phe-deu-giam-so-voi-2019-40295.phtml, access date 22/12/2021)
Strengths	**Weaknesses**
- long years with experiences in planting coffee and tea crops - Vietnam's coffee yield is often among the highest in the world, averaging 2.6 tonnes per hectare for Robusta and 1.4 tonnes for Arabica. Robusta coffee has the highest yield in Kotum province, followed by Gia Lai, Lam Dong, Dak Nong and Daklak.	- With the current processing capacity, raw materials cannot meet the processing capacity due to a sharp decrease in area and output, so some processing facilities are short of raw materials, unable to operate, many facilities have stopped working due to insufficient raw materials and unable to sell products due to lack of price competition.

(source: made by authors)

Next, as we find out from econometric model (see figure 6): there is policy implications, for instance, a reduction in exchange rate and CPI while increase in VNIndex will be in favor of tea export price.

In addition, many technologies on varieties, genes and care techniques help plants to adapt better response to climate change, seasonal changes as well as crop yield grow. Post-harvest preservation and processing techniques have also helped many countries reduce failure rate, improve product quality and consumption time, avoid supply is too high for a short time.

The US experience shows that there is no contract manufacturing model

Which is suitable for all. Under the same conditions, but the economic linkage results will not be the same between crops and livestock. Therefore, the economic linkage

between enterprises and farmers, especially in-depth linkages will not be successful in all types of agricultural products.

Contract manufacturing can only be successful when businesses can afford it

ability to consume all agricultural products for farmers at reasonable prices. With a large scale, contract production helps entities avoid risks. It is necessary to actively establish cooperatives and negotiating associations to help increase the ability to strengthen the position and bargaining power of farmers in the linking process, ensure output for agricultural products as well as ensure the interests of farmers. farmers in the process of implementing economic linkages with enterprises.

The state plays an important role in supporting and promoting contractual linkages

copper. Government policies must require farmers and businesses to be responsible for the performance of contracts. In Vietnam, with a fragmented and backward agriculture, the link between farmers and businesses is still loose. However, the correct orientation and support of the Government will create a great impetus to promote the development of economic linkages between enterprises and farmers.

Limitation of research

Author can expand research model for other agricultural products as well.

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Conflicts of interest

Authors declare there is no conflict of interest

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