

Supply Chain Strategy in Stabilization of Products Price: Case Study Beef Price in Indonesia

Ihwan Susila¹, Bambang Setiaji², Henri D. Wahyudi³, Anton A. Setyawan⁴

^{1,2,3,4}*Faculty of Economics and Business, Universitas Muhammadiyah Surakarta, Central Java, Indonesia*

Abstract— This research explores how the breeders, brokers, wholesalers, and retailers, along the supply chain of beef market; contribute to the beef price volatility. This study conceptualizes the policy of beef price stabilization that affected by beef production level, market structure, and government intervention. Using phenomenological approach, the findings highlight that price volatility commences from the beef supply response and market structure. A total of 18 in-depth interviews were conducted to gain insight into the complexity of the beef price formation specifically to capture and understand this phenomenon from the breeders 'point of views, the sellers, and the government. Purposive sampling was adopted to select participants to provide enough depth and riches to the unique experiences of the phenomena in Surakarta district, Indonesia. The experience of Surakarta City in maintaining the stability of beef price has implications both nationally and globally. This price stabilization model can be adopted by other regions and even other countries that still rely on imported beef. Surakarta is not a beef-producing agricultural area. The five research findings are important to serve as a lending model of effort in beef price stabilization. This applies also in maintaining supply availability. In a country, beef imports by the private sector are beneficial to beef buyers, especially at relatively low international period prices and stable. In periods of unstable global markets with high prices, communication and coordination, in larger cases, timely intervention and clear policy messages are needed in avoiding the buildup of private stocks. This is a precaution that can greatly aggravate the rise in domestic prices. This research focus on the beef price stabilization. However, the bargaining position of buyer and supplier has not identified. Future research need to explore how the level of information received by some actors in the supply chain. The government can use this research finding to maintain the price to be stabled and apply the policies through aspects of sustainability. This research contributes to provide the stabilization model of beef price stabilization in the supply chain framework.

Keywords— *beef price, stabilization, volatility, supply chain policy.*

1. Introduction

The global beef market faces serious challenges because of high animal feed prices, stagnant and even sloping consumption, and profits drop dramatically [1]. With the slow growth in total output and rising world prices, the growth of the global beef market is slowing down.

The beef cattle industry is an economic base with high potential for improving the quality of economic growth. The growth of beef cattle industry is motivated by supply and demand. On the demand side, commodities and beef industry products are determined by the level of consumer income, the number and the rate of population growth, the growing population of the upper-middle income, the increasing urbanization and the urban population, and the phenomenon of market segmentation. From the supply side, the supply amount is determined by the population of beef cattle, productivity and competitiveness of beef cattle. This is closely related to the availability and price of feed, technological change, and government policy [2].

Food price fluctuations are a serious issue [3-6]. The scarcity of beef supply from producer to consumer is one of the causes of price spikes. This causes an imbalance between supply and demand. There are many studies of food price fluctuations that require specific strategies and policies to address them, such as market efficiency [6], indirect market interventions, trade subsidies [7], and eliminate of trading enterprises [8]. Price stabilization refers to the control of price fluctuations to match or less than national inflation. This also applies to policies on beef commodities through aspects of sustainability [9, 10], and thus the policy of beef price control is really capable of resisting unstable price movements.

Stabilization of food prices, in this case is the price of beef, is related to the concept of food security which by FAO [11], is defined as when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary need and food preferences for an active and healthy life. Food security is closely linked to sustainable agricultural development, which FAO defined as the management and conservation of natural resources base, and the orientation of

technological change in the world future generations. Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable [1].

The Government of the Republic of Indonesia regulates food security in Law No. 18, 2012. Food security is a condition of food fulfillment for both nation and individuals, reflected in the availability of adequate food, including quantity, quality, safety, diversity, nutrition, equity, affordability, conformity with religion, culture, and society, which are beneficial to provide sustainable health, activity, and productivity impacts.

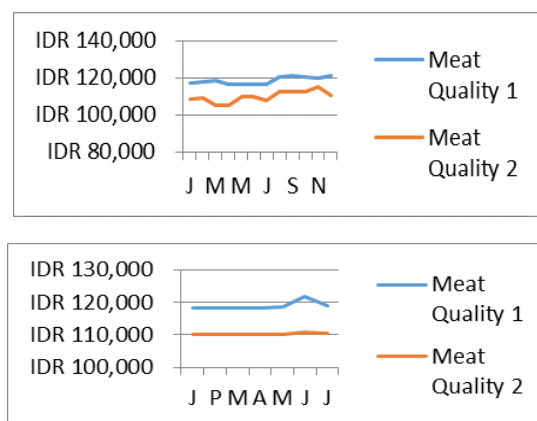


Figure 1. Beef Price Fluctuations of Surakarta City in 2017-July 2018

This paper presents research results on price stabilization concept of beef through phenomenology study in Surakarta City. Table 1 represents data of beef price fluctuations in Surakarta City which tend to be stable despite the high prices. Therefore, this study focuses on the stabilization policy to understand how the breeder, broker, trader, and other stakeholder establish beef price stabilization.

2. Literature Review

2.1 Price Stabilization

Price stabilization is likely to be rejected because of the difficult implementation of cost-effectiveness by the government [8]. Price stabilization causes the similarity between average domestic and global prices over the medium term. Nevertheless, price stabilization can also cause domestic prices to consistently be above the global price for a long time, and then harm the poor because most of the poor are food buyers [12]. This is the case in the Philippines, where price stabilization has turned into price support for farmers, although it will also

exacerbate poverty. It has also created huge costs for traders, causing huge financial losses to the [4].

A study in Bangladesh shows that careful planning, timely intervention and openness to international trade further support price stabilization rather than large expenditure on food subsidies [13]. Meanwhile, reliance on international markets does not guarantee price stability, therefore it is important for governments not to over-react to high price fluctuations and to adopt policies that actually cause huge economic costs and hamper growth rates.

Thus according to Dorosh, countries should avoid restrictions on private trade that undermine the development of private-sector markets. Conversely, a national policy should involve some other policies. First, the provision of national stocks that prevent large price increases. Second, the increase in international trade to limit government intervention to meet domestic demand. Third, the increase of domestic production through intervention in the related food sector. Fourth, the implementation of the safety net program to address the food security needs of poor households [14].

A study of the global rice model can serve as a benchmark in policy formulation on beef price stabilization. This model uses a partial equilibrium framework to investigate the impact of trade liberation in rice trading countries especially in Southeast Asia. It focuses on the price stabilization mechanism that has been adopted by the governments of Indonesia, Malaysia and the Philippines. Simulation results show that the abolition of state trade companies in all three countries will reduce domestic prices to 34% despite the increase in world prices only about 20%. When liberalization of free trade will be realized by 2020, domestic prices will decline further in Indonesia and the Philippines, and then lead to an increase in imports estimated at 4.5 million tons. This impact on domestic prices, however, is absorbed almost evenly among Indonesia, the Philippines, Thailand and Vietnam [8].

According to Hoang and Meyers [8], in this case there are always losers and winners in every policy change. If the State-trading Enterprise (STE) and AFTA tariffs are phased out, Indonesian and Filipino consumers will enjoy lower prices but farmers will face a decrease in revenues. It seems that this will have a major impact on the prevention of tariff elimination entirely by the government. If partial liberation is a choice, it is important that trade liberation should be accompanied by a policy that can distribute the net consumer welfare benefits to the net rice producers to ensure the

dilemma of the liberation process. They may include consumption taxes, income support, crop insurance and other agricultural input subsidies. Indirect market interventions may also have some degree of success in developing private market institutions, including those based on contracts and other pricing risk management systems [15].

2.2 Price Stabilization Policy

The policy of food commodity price stabilization has been studied previously [3, 13, 15], although most aim to analyze agricultural policies, such as subsidies, tax collection and government intervention through STE. This exogenous policy of course will not last long and cause deviations in the creation of market equilibrium. Most scientists are more confident in the perfect market equilibrium model, and this implies that there is no reason for public intervention. The reason for this is based on price stabilization through markets beyond what private agencies do is a waste of public money [7]. Public intervention can still be justified when food prices are high and incurring external costs in the future.

There are several theoretically disagreeing with trade restrictions for price stabilization [4]. First, trade restrictions reduce economic efficiency while debatable. Second, trade restrictions are not targeted to the poor and thus waste resources. Third, domestic price stabilization is not possible without the need for large fiscal costs. Fourth, policy-based domestic stabilization will actually destabilize the world market, and then make it worse for consumers in other countries than if there were no trade restrictions.

Gouel proposes an optimal storage policy model [7]. The framework for food stabilization policy design adopts the methods used in the modern literature on optimal monetary policy [16]. Government intervention through public storage or food distribution may be justified to avoid risks and complement market mechanisms. Storage management should take account of the fact that the price of a high commodity may be followed by an increase in the price of other commodities. Therefore, a realistic framework is required that requires optimal storage rules governing the accumulation and sale of stocks by looking at prevailing market conditions.

2.3 Supply chain policy in sustainable foods

The food industry has an economic impact and is related to important aspects of economic, environmental and social sustainability [9]. The main problem in sustainability faced by the food industry is related to price fluctuations, [17], and supply chain [9].

According to [18] price changes on feeder cattle and live cattle impact on wholesale and retail prices. The empirical results show that calves and volatility price feeds are important risk factors in the supply response function, whereas the detected negative asymmetric volatility implies that producers have a weak market position. Positive price elasticity on short and long term supplies indicates that in the short term the high price has a positive effect on the quantity provided. Furthermore, price volatility has a significant negative effect on production levels, indicating the producer is risk averse, while negative asymmetric effects are detected at price volatility. For the umpteenth time this showed that beef producers had weak market positions.

The main problem causing the high price of beef from the production side is the lack of natural grasslands. According to Rezitis and Stavropoulos this is an important reason why the Greek beef industry is not able to compete with those from other EU countries. Milk prices were found to have a negative effect on beef production, confirming that milk and beef are competitive products [18].

Sustainability is a relevant topic in the food industry [19], and related to the supply chain [9]. The issue of sustainability must be solved not locally but globally along the supply chain. In particular, we aim to analyze sustainability from the perspective of operations management, and then focus on what companies can do and how they can take advantage of sustainability to improve their competitiveness. In more detail, we take a supply chain perspective, since sustainability issues must be solved not locally but globally along the supply chain [20].

On the other hand, there seems to be a contradictory situation between social and economic sustainability. Social sustainability measures, especially aimed at better animal conditions, tend to have a negative impact on economic performance. Social sustainability seems to have got a trade off with economic sustainability. Therefore, it is necessary to analyze the value chain of the beef industry and identify important points at each stage in terms of economic, environmental and social sustainability. In addition, through a series of company case studies at different stages of the supply chain, [9], identify the actions necessary to overcome the critical point of sustainability and its influence throughout the supply chain. Setiaji et al. reaffirms that the factors affecting the price of meat are the bargaining power of some of the actors in the supply chain and market structure [21].

3. Research Method

This study was developed in line with the basic principles of phenomenology [22, 23]. The design of this research is exploration to gain insight on the stabilization of beef prices in Surakarta City. Participants who contribute to the development of understanding of the phenomenon of beef price movement are selected through purposive random sampling. Participants of this research are cattle ranchers, brokers, traders, local government, and Bank Indonesia.

Table 1. Participant profile

Alias	Role	Gender	Age
Narno	Breeder	Male	40
Sarwo	Breeder	Male	33
Adi	Broker	Male	46
Sugeng	Broker	Male	50
Agus	Wholeseller	Male	48
Eko	Wholeseller	Male	52
Agung	Small trader	Male	48
Ida	Small trader	Female	49
Endang	Small trader	Female	41
Sardi	Small trader	Male	45
Eko	Local government	Male	51
Wahyu	Local government	Male	48
Bagus	Local government	Male	47
Sapto	Local government	Male	45
Santi	Local government	Female	45
Adi	Local government	Male	52
Yuyun	Bank Indonesia Representative Office of Solo	Female	37
Santo	Bank Indonesia Representative Office of Solo	Male	38

18 in-depth interviews were conducted in March 2018. The study sample consisted of 14 males and 4 females with different roles in each beef business.

Certain criteria of selected samples play a role in obtaining the depth of knowledge because participants have a unique experience of the phenomena studied [24]. Interviews were conducted in office space, ranchers' houses and traditional markets. Given the original language of the researcher, interviews with participants were conducted using Indonesian and Javanese. Interviews of each respondent took place in an average duration of 50 minutes. Each interview was recorded digitally [25, 26], and then through the process of transcription, analyzed in Indonesian to then be translated into English. All personal information in the transcript has been removed to ensure the confidentiality of the participants, and a pseudonym made for each of them.

4. Finding and Discussion

This study shows that the beef price stability in Surakarta is sustained by five factors including supply availability, distribution continuity, affordability, policy communication and coordination.

4.2 Supply Availability

Supply availability is the first factor in beef price stabilization in Surakarta City. The need for beef in Surakarta is supplied by local slaughterhouses and some surrounding areas such as Boyolali, Sragen and Sukoharjo districts. This refers to a statement by Adi, a staff of the Surakarta City Agriculture Office.

The need for beef in the city of Surakarta is not only filled from local slaughterhouses, this is only a third, and two thirds are from the surrounding area. Certainly from Boyolali, Sragen and Sukoharjo districts. So far the amount of supply is sufficient

Bank Indonesia Representative Office of Solo also conveys the same information related to supply availability. Bank Indonesia's Santo confirms that

Strategic food commodities are definitely taken from the surrounding area. The beef is filled by the surrounding area, but the live cow is obtained from anywhere depending on the condition. For example, in the last three years, cattle were obtained from Sumbawa City (outside the island). Incidentally by this time, the availability of beef in Surakarta is still sufficient from the surrounding area only.

Monitoring on the amount of beef supply is also conducted through surveys, such as what has been submitted by Santo, a staff of Bank Indonesia Representative Office of Solo.

We surveyed beef, not cows. Here the context is from the producers at the beginning, and then the wholesalers and retailers sequentially.

4.3 Distribution Continuity

The second factor supporting beef price stabilization in Surakarta is distribution continuity. Traders get the beef easily according to the demand of the merchant. This condition is expressed by beef traders in Traditional Market Gede. Endang clarifies

Pretty stable so far. We continue to get from butchers easily, not from this city but from the surrounding area like Sukoharjo District precisely from Polokarto sub-district. That's all from there ... It could be said one cow per day for me to sell, a cow weighing a hundred kilograms. Yes, a day about that number.

Distribution continuity is also experienced by meatball traders who need beef every day. In Surakarta there are hundreds of meatball traders, representing business consumers who buy beef every day. Agus explains

Yes. The availability of meat here is sufficient for our production needs.

4.4 Affordability

The stability of beef prices in Surakarta is closely related to the power of both business and end consumers. In addition, the price of beef is also determined by the quality of meat. Consumers can choose the type of beef they want with a variety of prices. In the wholesaler point of views, Agus describes

Yes, every kind of beef is different. We call it Lamusir for this type of meat for buyers from restaurants or steak houses, much better quality at higher prices. For consumers generally buy type AB meat, a reasonable type, with a reasonable price for them. Yes, it is expensive, but they are aware that it is a normal price, and they have a choice of variety.

Prices are relatively high but this has no effect on the consumers. A small trader Ida expresses

Yes indeed. Prices are high but we go back to the topic, they have different types of needs for variants of meat and prices. This is all definitely sold.

The local government of Surakarta City through several agencies also undertakes a policy aimed at stabilizing the beef price. One such effort is market operations. This was disclosed by the staff of Bank Indonesia Representative Office of Solo, Yuyun that

Once we conducted market operations through the supply of frozen meat. When that price volatility fluctuates. Even so, over time the new equilibrium price will be created, market operations to force the price below 100 USD will not survive, but at least there is a price stabilization during the turmoil. Now there is also the policy of Maximum Retail Price (MRP) in modern market especially, they do not dare to put the price above MRP. MRP applies to producers and markets, and this policy is set by both central and local governments. We have price monitoring, there are warnings for over-MRP-monitored traders, although in some cases we have to ignore the rules for example during Idul Fitri holidays.

Subsidies also become one of the choices of local government policy although only limited both amount and time. Yuyun describe

There is no standard strategy in deciding policies, especially to determine the type of subsidy. It was all decided together. There used to be market operations through subsidizing traders, as well as indirect subsidies through transportation costs. That is all our agreement, as in the case of not giving subsidies but we make cooperation with distributors to be given a low price. This means that the strategy can be through any way, it is all delivered in the Regional Inflation Control Committee (RICC), at the level of leadership and technical. From here there are decision makers. All sectors, even police, soldiers and food task forces are empowered in this team.

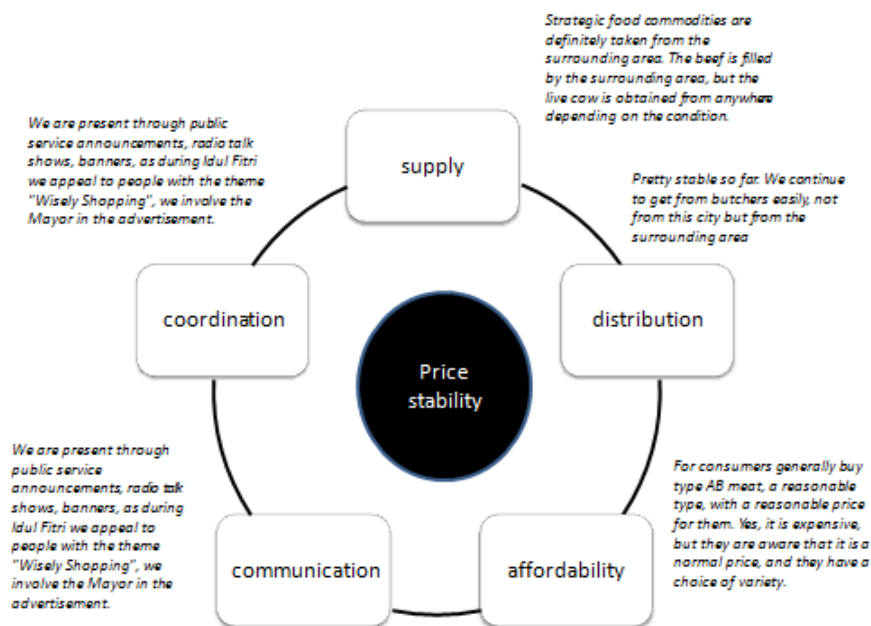


Figure 2. Price Stability Model in SC

4.5 Policy Communication

Another factor supporting beef price stabilization is policy communication. Local governments are approaching beef distributors to reduce profits to create cheaper and stable prices from price spikes. According to Sapto

At RICC Surakarta, we hold regular three-month meetings to bring together RICC Chair and distributors. We give direction to distributors not to profit too much.

In addition to communicating with beef distributors, local governments are also conducting other communication models such as public service announcements, banners and radio talk shows. *Communication will shape public expectations. We want people to know that when there is a price fluctuation, the TPID team will present the deal. We are present through public service announcements, radio talk shows, banners, as during Idul Fitri we appeal to people with the theme "Wisely Shopping", we involve the Mayor in the advertisement. Another example is President Jokowi down to participate in stabilizing prices. Current inflation over the last two years is relatively stable compared to the previous year.*

4.6 Coordination

The fifth factor in beef price stabilization strategy is coordination. The Municipal Government of Surakarta established the Regional Inflation Control Committee (RICC) by appointing the Mayor as the team leader. The team is tasked with

evaluating the sources and potential for inflation and its impact on achieving the regional inflation target. Santo explains

RICC appoints the Mayor as chairman, Bank Indonesia as a representative and as secretary, they are assistants 1 and 2. Team members include the Department of Transportation, the Trade Service, the Logistics Affairs Agency, the law apparatuses such as the Chief of the Resort Police. The Central Bureau of Statistics is not included in the team because there will be a conflict of interest, however they are collecting and processing data. Even so the Central Bureau of Statistics is also invited to attend regular meetings.

Routine coordination is undertaken to determine the inflation and monitoring conditions for policy implementation aimed at controlling inflation. Coordination among members of this team is expressed by Santo

Surakarta holds RICC meetings every month. Bank Indonesia also has data managers, PIHPS, presenting food commodity data resulting from daily surveys, and these are uploaded to the system to be accessible to the public via the internet. From there it can be seen overpricing given a red indicator, and then the team determines whether or not it is necessary for market operations to take place.

There is an early warning system; here there is RICC and food task force. We used to work separately, now we are in synergy.

5. Conclusion

The experience of Surakarta City in maintaining the stability of beef price has implications both nationally and globally of supply chain policy. This price stabilization model can be adopted by other regions and even other countries that still rely on imported beef. Surakarta is not a beef-producing agricultural area. The five research findings are important to serve as a lending model of effort in beef price stabilization. This applies also in maintaining supply availability. In a country, beef imports by the private sector are beneficial to beef buyers, especially at relatively low international periods prices and stable. In periods of unstable global markets with high prices, communication and coordination, in larger cases, timely intervention and clear policy messages are needed in avoiding the buildup of private stocks. This is a precaution that can greatly aggravate the rise in domestic prices.

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