# Performance and foresight of beef cattle development in Central Java

**W. Roessali,* Masyhuri,† Sudi Nurtini,‡ and D.H. Darwanto†**

*Dep. of Social Economic, Faculty of Animal Agriculture, Diponegoro University, Semarang Indonesia; †Dep.of Agriculture Economic, Faculty of Agriculture Gadjah Mada University Yogyakarta Indonesia; and ‡Dep. of Social Economic, Faculty of Animal Science, Gadjah Mada University Yogyakarta Indonesia

**ABSTRACT:** The study was aimed to examine the development of beef cattle that was expressed in consumption growth, production, price stability during the years 2002-2009. Total beef consumption in Central Java during the period 1990 to 2009 rose at a rate of 3.49% per year and production growth rate increased by 1.97% per year. Beef production performance was insufficient, the contribution of meat to total meat production decreased from 26.41% in 1990 to 14.45% in 2009. Beef prices in the same period rose by an average rate of 10.35%, pure beef prices rose an average of 10.45% per year, while the price of beef liver increased on average of 8.58% per year. The development of cattle production in Central Java which was slow allegedly due to the low cow productivity. Thus the focus of programs and policies need to be directed to achieve the improvement of cultivation technology and improved price incentives can stimulate sustainable production and development of beef cattle

**Key words:** performance, prospect, beef cattle

## INTRODUCTION

Livestock sector development in general is aimed at achieving six objectives namely (a) promote economic growth, (b) increase employment, (c) increase foreign exchange earnings, (d) improve food security, (e) reduce the number of poor people and (f) create a distribution of income. Livestock sector plays an important role in improving household nutrition is an indicator of food security. Livestock sector is one of the leading sources of growth in the agricultural sector. The contribution of Livestock sub-sector in Central Java in the formation of GDP showed the highest growth compared with that of other sub sectors. In the year 2004 - 2008 the livestock sector growth rate amounted to 1.34% (BPS, 2009a).

The strong demand for beef, together with a domestic supply shortage, has resulted in a strong rise in consumer prices for beef. The Indonesian government has progressively opened its market to imports by liberalising and, as a result, imports of beef have become increasingly important in meeting the growing demand. In 2007, imported beef was accounted for 29 percent of the Indonesia's total beef consumption.

The increasing demand for livestock products, especially beef, serves basically as the magnet factor for agribusiness growth in beef cattle. Currently the rate of demand for beef increases exceeding the rate of its supply and in the long run it is estimated that beef demand would continue to rise. Increased imports of beef which is going higher are some efforts to face the meat self-sufficiency target by 2014. Australia is the largest exporter country of beef to Indonesia. The export reached 28% of the total beef demand in Indonesia (Subagyo, 2009).

Efforts to improve cattle production in order to achieve self-sufficiency in meat are considered to be the major challenge. Therefore we need an evaluation of development performance of beef cattle in order to understand the various opportunities available and weaknesses encountered, and solution policies and strategy development that need to be perfected.

This paper aims to review the performance of the development of beef cattle that has been implemented until the year 2009. Reviews conducted on aspects of consumption, production, price dynamics and prospects of development of commodity beef cattle in the future.

## BEEF CONSUMPTION DYNAMICS

Beef consumption in Indonesia has grown stronger during in the past two decades of economy. The consumption increase occurred because of the increased living standards and changing patterns of consumption of traditional foods such as rice, corn and potatoes, to the animal protein diet with a higher proportion. Agricultural trade liberalization also contributed to the increased consumption of these products, including beef. The government projected that the level of meat consumption in 2010 amounted to 2.72 kg / Capita / year so that the needs of the domestic meat reached 654 400 tons with an average consumption growth rate of 1.49% per year (Central Bureau of Statistics 2005).

Total beef consumption in Central Java during the period 1990 to 2009 increased almost threefold to reach a peak in the year 2009 amounted to 69.7 thousand tons. Data from Central Java Husbandry Statistics show an average growth rate of production and consumption of beef in Central Java in the period of 1990-2009 with average of 1.97 percent and 3.49 percent per annum. Revenue growth in this period is an average of 15.32% per annum leading to a strong demand for beef and beef products, and it is also encouraged by population growth rate during this period with 1.11% per year (Figure 1).

The dynamics of beef consumption in Central Java in Figure 1 shows that the level of consumption in the period 1993 to1999 decreased 1.62% from 46.9 thousand tons to 42.6 thousand tons. The decline occurred due to consumption of people's purchasing power decreased due to fuel price increases in 1993 added with the influence of the monetary crisis in 1997. Later in 1999 to 2007 consumption rate increased by an average of 7.34% per year, from 42.6 thousand tons to 77.2 thousand tons. However, in the subsequent years it decreased significantly to 69.7 thousand tons due to soaring fuel prices especially that of kerosene, the impact of kerosene to gas conversion happening at the end of 2007 which was followed by an increase in essential staple food prices which led to declining purchasing power.

Average of meat consumption in 1997 that was 24 g/ capita/ day decreased to 12 g/ capita/ day in 1998 in urban areas. In rural areas the rate has decreased from 20 g/ capita/ day (1997) to 10 g/ capita/ day (1998) (Latief et al. 2000). Level of beef consumption in Central Java at 4.57 g/ capita/ day in the year 2000 rose to 1.9 g/ capita/ day in the year 2004 (Disnak Jateng, 2005). Level of beef consumption per capita in urban areas was higher than in rural areas (Fachrina, 2005). The differences in the level of consumption of beef meat are due to it is more widely consumed by urban families who have higher incomes than that of rural area. Animal food or products are expensive and even considered a luxury for some people.

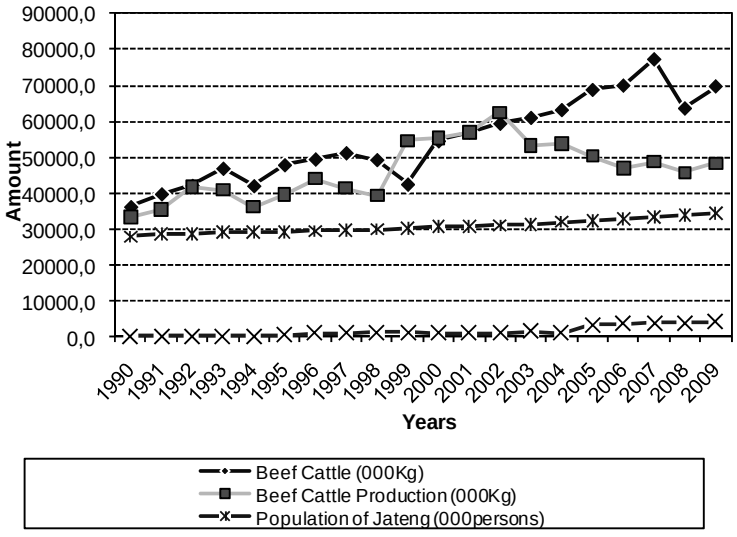



**Figure 1.** Development of Beef Production and Consumption, Population and Income per Capita in Central Java in 1990-2009

SUSENAS data (2005) reported that beef was consumed only by 12.5 percent of city residents and 3.9 percent of villagers. In general, meat consumption has different income elasticity between urban and rural areas. In the urban areas this is generally more elastic and inelastic in rural areas. It also has a tendency of elasticity value which is smaller for households with larger incomes. Harianto et al. (2008) reported that income plays a more positive role in affecting the demand for beef compared to beef price itself. Influence of beef prices on request was only equal to -0.007, whereas the income effect was large enough i.e. 0.24. Thus in the future the increase in demand for beef will be more driven by the increase of household income. Under these conditions, further economic development which resulted in an increase in income of the peoples will increase the consumption of meat.

Along with the increase in public revenues, in the period 2000 to 2007, the consumption levels significantly increased. In fact, the discovery of bovine spongiform encephalopathy (BSE) in the United States in December 2003 did not result in serious food safety concerns that weaken the demand of beef in Central Java. Regulations banning imports of beef from countries affected by the case of the disease may cause no concern of society to consume beef. However, the data show that there were still imported beef from Brazil, countries which was allegedly still not free from food and mouth disease cases (PMK) of 558.6 tonnes of SITC 012 and 85.7 tonnes of SITC 016 (BPS, 2008). Although the trends of demand tend to increase for meat and to meet the sufficient amount some must be imported, making policy like easing of import meat from countries not known to be safe needs to be addressed with caution because of imports from the region at risk will develop problems with domestic beef cattle.

## BEEF PRICE DYNAMICS

Population growth and changing preferences is basically an inducing factor for agribusiness growth in beef cattle. Other factors that may affect the demand for beef cattle is the price of beef itself, the prices of other commodities act both as a substitute or complement.

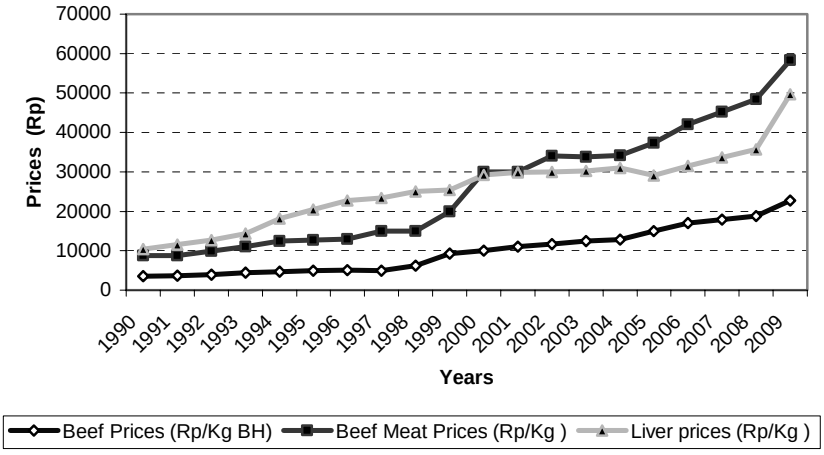



**Figure 2.** Growth Rates of Cattle, Meat and Liver of Cattle in Central Java in 1990-2009

Beef prices in the period of 1990 to 2009 increased from Rp. 3500/Kg live weight to Rp 22 738/Kg live weight at a rate of increase in average of 10.35%. Pure beef increased with an average of 10.45% per year from Rp 8 825/Kg to Rp 58 375/Kg, while for the price of beef liver increased from Rp. 10 400/Kg to Rp 49 700/Kg or increased an average of 8.58% per annum. Figure 2 shows that up to the year 2000 the price of beef liver is more expensive than the price of pure beef. This condition is caused by the increased supply of liver imports so the price tends to fall sharply.

Short-term price fluctuations or monthly prices of agricultural commodities in general are strongly associated with fluctuations in the production of particular commodities. In the beef commodity, the relationship is relatively close since the meat product is a product that can be easily damaged. High

price fluctuations cause fluctuated revenue for the breeders. Such conditions are not conducive to the development of beef cattle because of the profits are unstable. In fact, profit is the main attraction for businessmen to invest and expand their business activities.

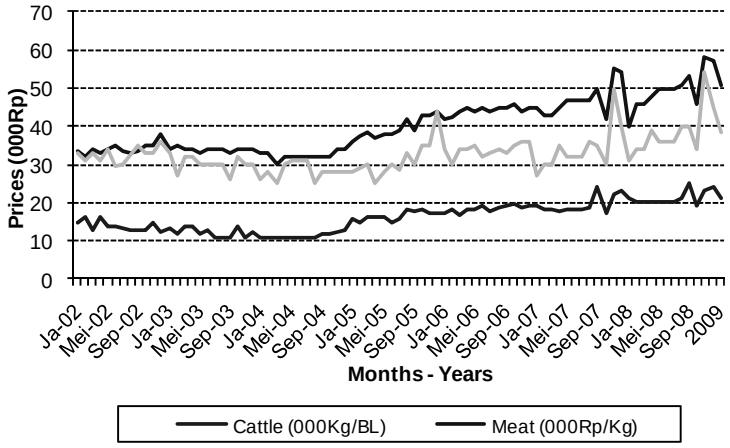



**Figure 3.** Growth Rates of Cattle, Meat and Liver of Cattle in Central Java during January 2002 to December 2008

Figure 3 shows the development of the monthly price of cows, beef and beef liver during January 2002 until December 2008. It appears that during the years 2002-2008 the price of beef has an upward trend with fluctuations in the range of Rp 1000 per kg / BL to Rp3000 per Kg / BL, the average increase of 7.1% per year from Rp 13 996 in 2002 to Rp. 21 119 per kg live weight in 2008. Pure beef in the same period increased by an average of 6.85% per year from Rp 34 125/Kg to Rp 50 792/Kg, while for the price of beef liver increased from Rp. 32 567/Kg to Rp 38 285/Kg or increased with average of 2.71% per annum.

The price is more volatile compared with that of the beef liver and beef cattle prices. Price hikes occurred about the month from September to October and then dropped significantly at the end of the year. The sharpest increase and decrease were at the end of the year 2007 and 2008 which was up 19% at the end of August and then fell 24% at the end of September. In other words, there are certain times in which the availability of meat in certain months has relatively high demand so it can not decrease prices at the consumer level.

**Table 1.** Average Monthly Price Changes of Cattle, Meat and Beef Liver Year 2002-2008

| Month | Beef , % | Pure Beef , % | Beef Liver , % |
|---|---|---|---|
| January | 5.77 | 3.00 | -1.04 |
| February | 3.79 | 6.24 | 3.92 |
| March | 7.44 | 5.17 | 1.02 |
| April | 3.79 | 6.44 | 3.35 |
| May | 6.12 | 6.64 | 3.09 |
| June | 6.12 | 6.12 | 3.09 |
| July | 6.77 | 6.90 | 3.09 |
| August | 8.32 | 7.52 | 4.91 |
| September | 11.51 | 7.95 | 7.44 |
| October | 6.53 | 4.66 | 1.02 |
| November | 7.44 | 8.78 | 10.29 |
| December | 11.49 | 6.99 | 6.99 |

Source: Central Java Livestock Statistics 2002-2008

## DYNAMICS OF BEEF PRODUCTION

Contributions beef ranked first for non-poultry meat in Indonesia. The development of production in 2006 reached 395 840 tonnes increased 3.98% from the previous year 358 700 tonnes, in 2007 increased to 418 210 tonnes, or there was an increase with the rate of 2.79% per annum. The growth of other animal meats, such as buffalo, goats and horses, although in general increased, is still relatively low compared with beef growth.

Central Java province becomes the third contributor to the national meat production (BPS, 2009b). Figure 4 shows the top ten provinces beef producers in Indonesia in 2008 with the highest percentage contribution of East Java (23.60%), West Java (14.9%), Central Java (13.9%), West Sumatera and Banten each (4.6%), NAD (3.5 %), South Sulawesi (3.40%), North Sumatera (2.80%), South Sumatera (2.60%) and NTB (2.20%).

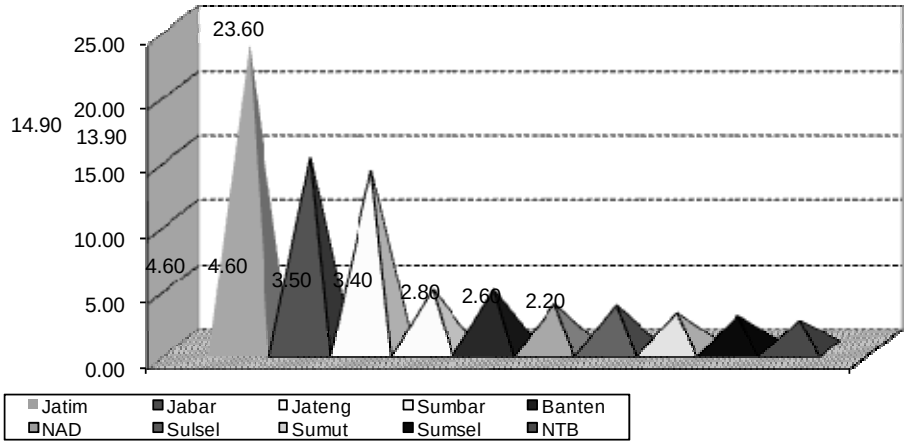



**Figure 4.** Meat Producers Ten Provinces in Indonesia Year 2008

Beef productions in Central Java during the years 1990 to 2009 are shown in Figure 5. Total meat production increased an average of 5.24%. The largest contribution came from the year 2009 amounted to 64.9% of poultry meat, beef meat to 23.83%, followed by mutton and lamb respectively for 5.25% and 3.5%. The highest production growth rate was 3.71% for lamb and poultry at 3.08%, then followed in succession by beef and mutton respectively 1.72% and 1.38%, while the meat of buffalo, horses and pigs decreased respectively by 3.52 %, 19.32% and 3.24% per year (Figure 5).

The above description shows that the dynamics of beef production has declined. Production dynamics can basically be caused by the reduction of cow productivity levels in Central Java. The productivity can be caused by changes in the level of technology by farmers. Basically, this depends on production capacity and quality of business management, like the way of maintenance, feeding and mating. Types of seeds used will determine the potential productivity (maximum) that can be achieved by the breeders, while the quality of the business will determine the extent of the potential productivity inherent to the stockers exploited by breeders.

Productivity of livestock is a potential that is manifested in two aspects: the reproduction and production aspects. Productivity of livestock is used as a guide to determine the progress of business, which is associated with a character who owned by the cattle. According to Hardjosubroto (1994,) productivity was determined by the genetic ability, environmental factors and interaction between both factors. Mahaputra, et al. (2003) mentioned that 30% of livestock productivity was influenced by genetic factors and 70% was influenced by environmental factors, among these environmental factors, feeding factor influences 60%.

The distribution of cattle population shows that development centres act as stocker and meat producers. Figure 5a and 5b show the area of beef cattle and producers in Central Java. Areas with the

largest populations like Blora, Wonogiri, Grobogan, Rembang, Boyolali, Klaten, Sragen, Magelang, Semarang and Pati are the source regions of cow calf operation. Boyolali, and Semarang especially in 2008, became the centres for dairy cows with a population of about 51.88% and 27.42%, The beef cattle which derived from male dairy cattle production (Disnak, 2009).

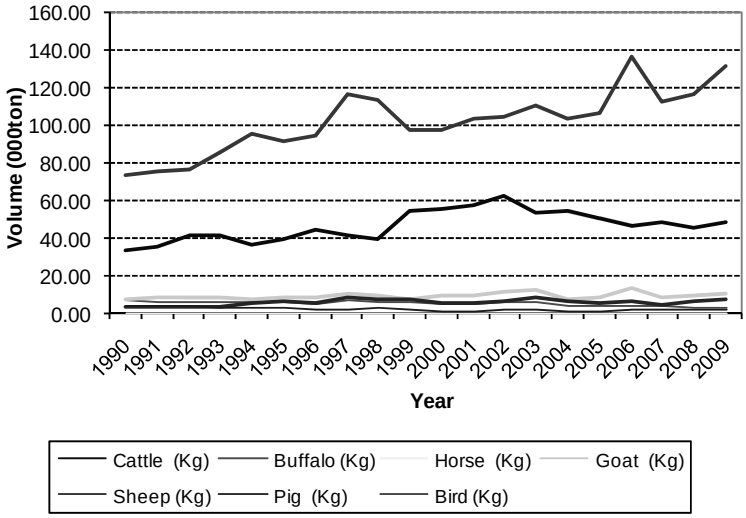



**Figure 5.** Development of Meat Production in Central Java in 1990-2009 Source: Livestock Statistics 1993-2010, Central Java

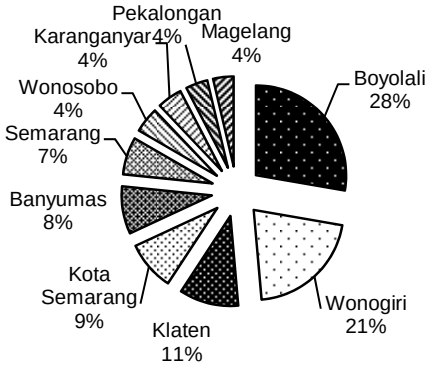
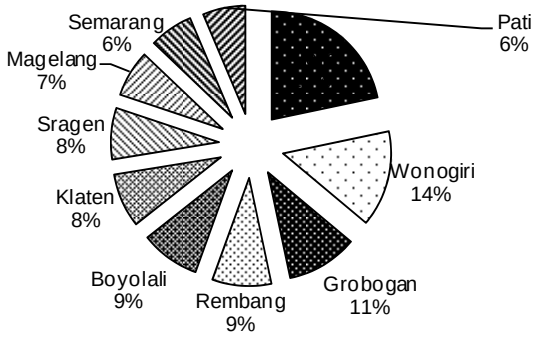



**Figure 5a.** Top Ten Regional Beef Producers in Central Java 2008




s

Figure 5b. Big Ten Territory Cattle Population in Central Java in 2009

Cattle development efforts need to consider several things, among others: 1) beef should be able to be consumed by the public with affordable prices, 2) domestic beef cattle farm (folk farm) should benefit financially so that it can improve the lives of farmers as well as stimulate to increase sustainable production, and 3) cattle businesses must contribute positively to the national economy (Kuswaryan et al. 2004).

## CONCLUSIONS

In line with the increase in household incomes and improved public awareness about nutrition, animal protein consumption in the future will continue to rise. The increase in demand of beef aggregately will be stimulated by the rise of incomes, the shift in consumption patterns and urban development.

Beef cattle is one of the cattle that has a major contribution as the producer of meat. Beef production in Indonesia and especially in Central Java has not been able to meet that demand which tends to increase every year. The slow rate of production growth resulted in the increased demand for imported beef and beef meat to meet the needs of consumption and production. Imbalances between demand and supply push meat prices to rise from time to time. Relatively high meat price fluctuation and other conditions are not conducive to the development of beef cattle. Costly beef price needs to be addressed carefully because it leads to the easing of the beef import policy from the area at risk of dangerous diseases that will invite problems of domestic beef cattle development.

## LITERATURE CITED

BPS, 2008. Statistik Impor Indonesia. Badan Pusat Statistik 2009. Jakarta.

BPS, 2009a. Central Java in Figure 2009. Badan Pusat Statistik Jawa Tengah.

BPS, 2009b. Statistik Indonesia 2009b. Badan Pusat Statistik. Jakarta.

Disnak, 2009. Statistik Jawa Tengah 2009. Dinas Peternakan Jawa Tengah. Semarang.

Fachrina, A. 2005. Pola Konsumsi Pangan pada Rumah Tangga Miskin di Pedesaan dan Perkotaan di Lima Propinsi Pulau Jawa. Skripsi Departemen Gizi Masyarakat dan Sumberdaya Keluarga, Fakultas Pertanian, IPB.

Harianto, A. Fariyanti, H. P. Saliem, E. Suryani, E. Ariningsih, N. Rosiana dan S. Jahroh. 2008. Karakteristik dan Arah Perubahan Konsumsi dan Pengeluaran Rumah Tangga. Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian Depatertemen Pertanian.

Hardjosubroto, W. 1994. Aplikasi Pemuliabiakan Ternak di Lapangan. PT. Gramedia. Jakarta.

Kuswaryan, S., S. Rahayu, C. Firmansyah, dan A. Firman. 2004. Manfaat ekonomi dan penghematan devisa impor dari pengembangan peternakan sapi potong lokal. Jurnal Ilmu Ternak 4(1): 41−46.

Latief, D, Atmarita, Minarto, Basuni A dan Tilden R. 2000. Konsumsi Pangan Tingkat rumah Tangga Sebelum dan Selama Krisis Ekonomi. Dalam:Prosiding Widyakarya Nasional Pangan dan Gizi VII. Jakarta: LIPI.

Mahaputra, S., P. Kurniadhi, Rohkman dan Kadiran. 2003. Analisis Biaya Pemeliharaan domba dengan Complete Feed. Buletin Teknik Pertanian Vol 8(2)

Subagyo, I. 2009. Potret Komoditas Daging Sapi. Economic Review No. 217