

14. International Benchmarking of Beef Production

Michael Langemeier

<mlange@agecon.ksu.edu>

Michael Langemeier is a professor of Agricultural Economics at KSU. He has been on the faculty at KSU since 1990. Extension and research interests include benchmarking of technical and financial performance, strategic positioning, and economies of size. In addition to his extension and research program, Michael teaches courses in Farm Management, Production Economics, and Managerial Economics.

Claus Deblitz

Abstract/Summary

This presentation will compare and discuss beef production costs in countries in North America, South America, Europe, Asia, and Australia. Also, the production systems and productivity of representative farms in various countries will be discussed.

International Benchmarking of Beef Production
Michael Langemeier and Claus Deblitz
2011 Risk and Profit Conference
August 2011

Introduction

This paper discusses beef production benchmarking using data from *agri benchmark*, a global network of beef economists. The beef branch of *agri benchmark* has been operating for 9 years and currently involves 24 countries (table 1). The numbers after the country abbreviations in table 1 represent the herd size for each representative farm. For example, AT-30 represents a farm in Austria with 30 beef cows. In the United States, both Kansas State University and Texas A&M University are involved in the *agri benchmark* beef network. The US-160 farm is a representative Kansas farm with beef cows and cash crops that was developed by personnel at Kansas State University. The US-240 and US-500 farms are representative farms in New Mexico and Montana that were developed by personnel at Texas A&M University.

The beef network of *agri benchmark* records detailed data on sales, costs, and cattle performance measures for cow calf and beef finishing farms. This paper focuses on cattle performance measures, total returns, and total costs for cow calf farms. There were 44 representative farms in the 24 countries in 2009.

Cattle Performance Measures

Figures 1-3 present information on weaning age (days), weaning weight (kg), and weaning percent. Weaning age is typically between 7 and 9 months. However, weaning age is only 5 months for one of the Spanish farms (i.e., ES-90) and for the farm in Mexico. Weaning weights vary from less than 100 kg (220 lb) in Indonesia to over 375 kg (827 lb) in Austria. Weaning weight differences are driven by differences in management, availability of feedstuffs, and market preferences. Weaning weights were relatively lower in Mexico, Argentina, Brazil,

Columbia, and Indonesia. Weaning percentages were relatively lower in Mexico, Brazil, and Columbia.

Total Returns

Total return information by participating country in 2009 is presented in figures 4 and 5. Figure 4 presents absolute return figures while figure 5 presents return proportions by country. Total returns are broken into three categories: culls, weaners, and government payments. Cull animals include old cows and surplus heifers. Returns for all countries are converted to U.S. dollars and expressed on a per 100 kg of live weight sold basis.

The average total return was 232 U.S. dollars per 100 kg of live weight sold. Total returns for the three U.S. farms (US-160, US-240, and US-500) were below this average. In general, total returns were relatively higher in Europe, with the exception being the relatively low returns in the Ukraine; and relatively lower in Argentina and Brazil.

With the exception of the two smallest UK farms and the smallest farm in the Ukraine, the farms in Europe received government payment income for the cow calf enterprise. These payments, as a proportion of total returns, ranged from approximately 5 percent for the largest farm in Hungary to approximately 70 percent for the Czech Republic farm.

Total Costs

Figures 6 and 7 contain total cost information by participating country in 2009. Figure 6 presents absolute cost figures while figure 7 presents cost proportions by country. Cash and opportunity costs are included in total cost. Costs are first broken into two categories: factor costs (land, labor, and capital) and non-factor costs. Land costs include crop share and cash rent paid and imputed rents for owned land. Labor costs include hired labor and an imputed charge

for operator labor. Capital costs include interest paid and an imputed charge on equity. Non-factor costs represent all costs not classified as land, labor, and capital costs.

It is evident from examining figure 7 that cost proportions vary significantly among countries. These large cost differences are due to differences in production systems and relative input prices among the countries. Non-factor costs on average account for 50.1 percent of total cost. Land costs on average account for 23.2 percent of total cost and range from 2.9 percent for one of the farms in Indonesia (ID-2) to 71.0 percent for one of the farms in Argentina (AR-1000). Land costs for the US-160 farm account for 28.2 percent of total cost. Labor costs on average account for 20.7 percent of total cost and range from 3.2 percent for one of the farms in the Ukraine (UA-295) to 69.3 percent for one of the farms in Indonesia (ID-3). Labor costs for the US-160 farm account for 10.8 percent of total cost. Capital costs on average account for 6.0 percent of total cost and range from 0.2 percent for one of the farms in the Czech Republic (CZ-420) to 27.5 percent for one of the farms in South Africa (ZA-400). Capital costs for the US-160 farm account for 2.4 percent of total cost.

Total cost ranged from 94 to 731 U.S. dollars per 100 kg of live weight sold. The average total cost was \$276. Total cost was more than one standard deviation above the average total cost for the two Austrian farms, the smallest Spanish farm, the medium sized U.K. farm, and the Norwegian farm. Total cost was less than one standard deviation below the average total cost for the largest farm in the Ukraine, the three largest farms in Argentina, for the largest farm in Brazil, and for the medium sized farm in Columbia. The total cost for the US-160 farm was approximately \$15 below the average total cost for all representative farms.

Total Cost and Returns

Figure 8 presents total cost, returns from the market, and total returns by country in 2009. A square is used to illustrate returns from the market and a triangle is used to illustrate total returns. For the countries with no government payments (see figures 4 and 5), the returns from the market are equal to total returns. The farms with a total return above total cost earned an economic profit in 2009. The average economic profit was a -\$44. Economic profit for the US-160 farm was -\$51.

Approximately 11 and 23 percent of the representative farms had market returns and total returns respectively that were higher than total cost. Two important conclusions can be garnered from these percentages. First, government payments enabled several of the representative farms to turn a market loss into an economic profit. Second, a substantial proportion of the representative farms had economic losses in 2009. This obviously puts a damper on expansion prospects.

It is common when benchmarking to categorize firms into groups for further analysis. With this in mind, the top five and the bottom five farms in terms of economic profit (total return minus total cost) will be further discussed. The average economic profit for the top five farms was \$102. Three of the five top farms received a portion of their income from government payments. The average economic profit for the bottom five farms was a -\$155. Interestingly, two of the five farms with the lowest economic profit received a portion of their income from government payments.

Summary

This paper used data from the *agri benchmark* beef network to examine cattle performance, total returns, and total costs for participating countries with a representative cow

calf enterprise. The wide difference in costs, returns, and net returns is indicative of differences in competitive positions among the participating countries. These differences could lead to changes in market shares for importing and exporting countries. More information pertaining to *agri benchmark* can be garnered from the following web site: www.agribenchmark.org.

Michael Langemeier
Professor
Dept. of Ag. Econ.
Kansas State University

Claus Deblitz
Institute of Farm Economics
Johann Heinrich von Thunen-Institute (vTI)
Braunschweig, Germany

Table 1. Abbreviations for Countries Involved in *agribenchmark* Beef Network.

Country	Abbeviation
Argentina	AR
Austria	AT
Australia	AU
Brazil	BR
Canada	CA
China	CN
Columbia	CO
Czech Republic	CZ
Germany	DE
Spain	ES
France	FR
Hungary	HU
Indonesia	ID
Italy	IT
Mexico	MX
Norway	NO
Peru	PE
Poland	PL
South Africa	ZA
Sweden	SE
Ukraine	UA
United Kingdom	UK
United States	US
Uruguay	UY

Figure 1. Weaning Age (days), 2009.

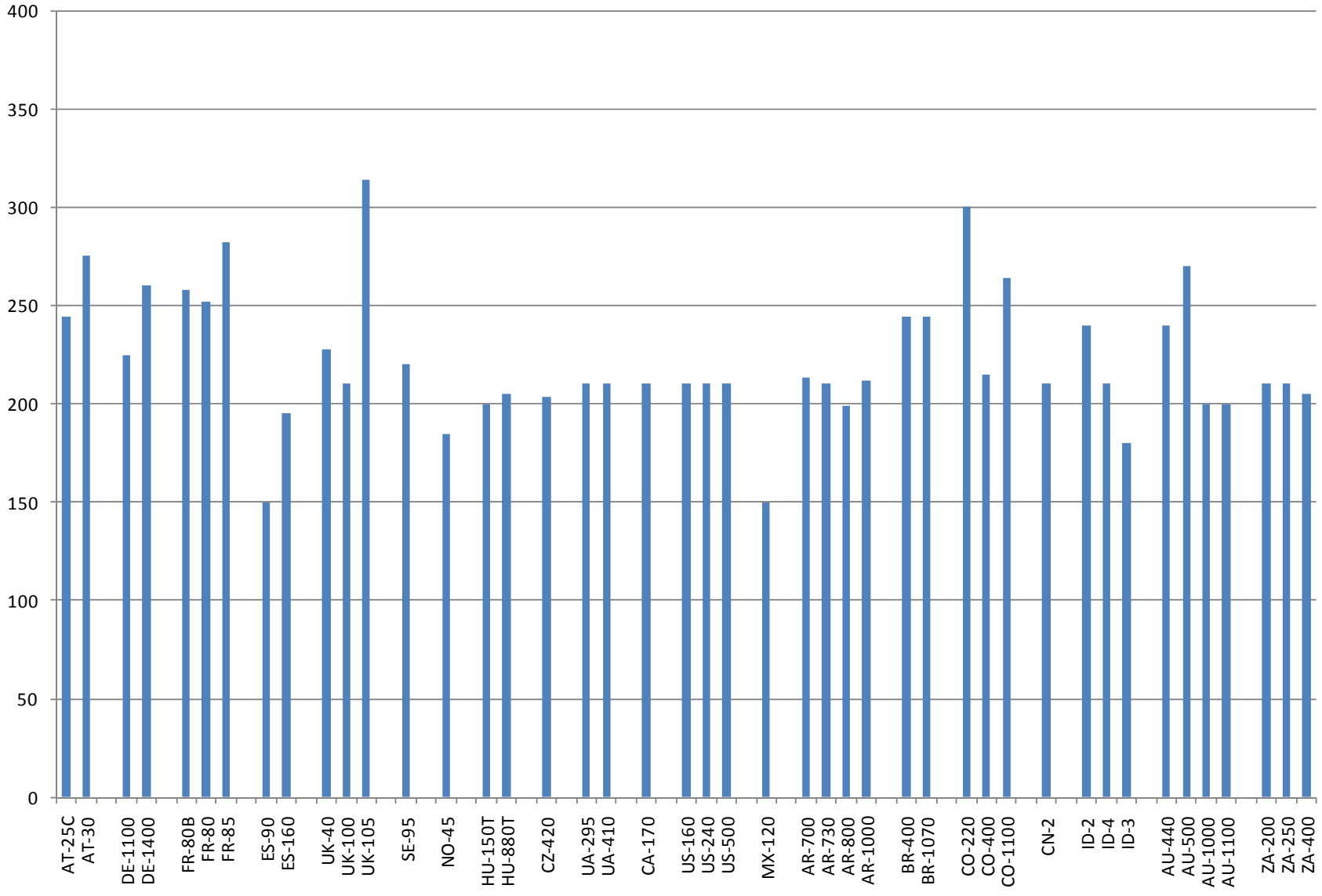


Figure 2. Weaning Weight (kg), 2009.

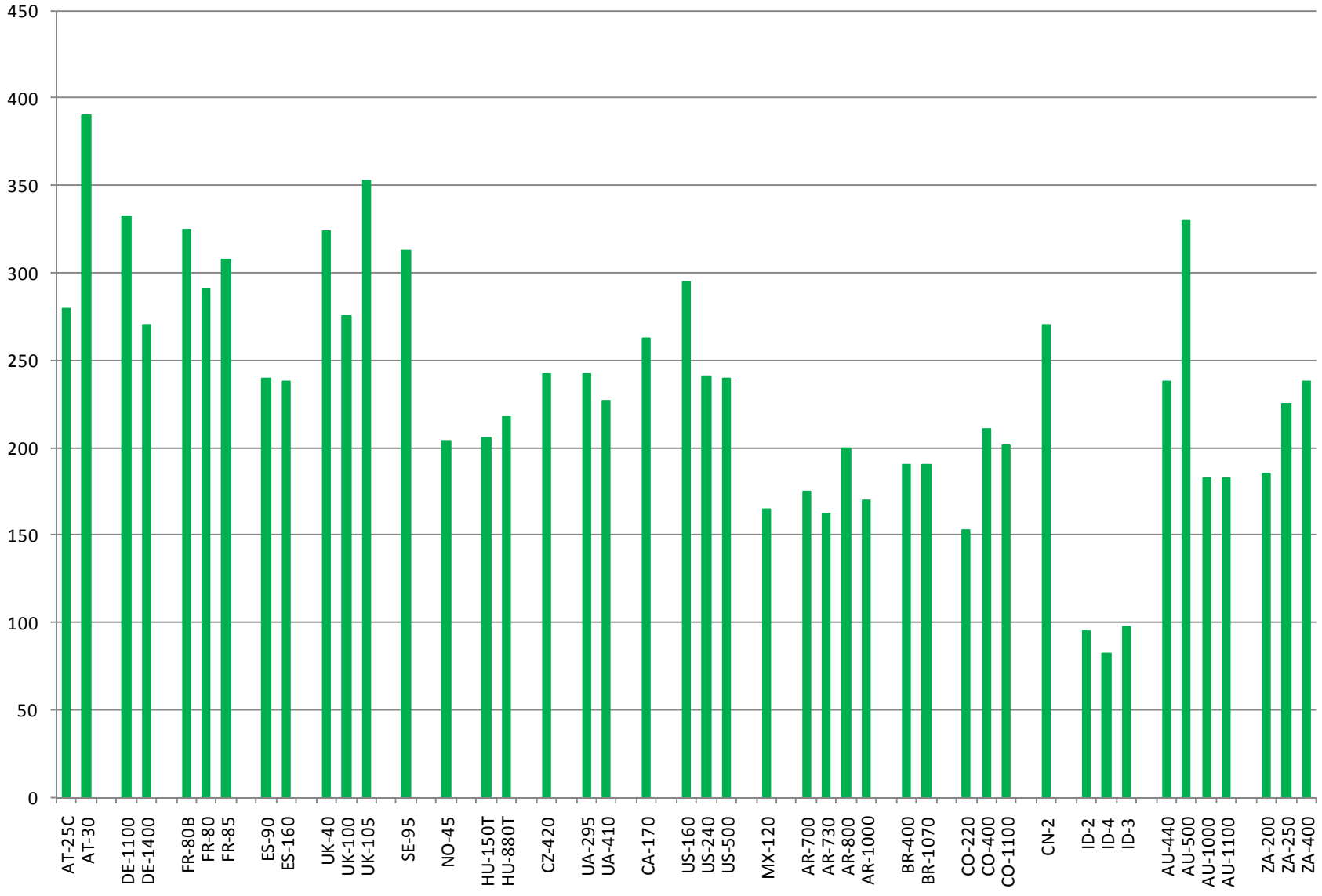


Figure 3. Weaning Percent, 2009.

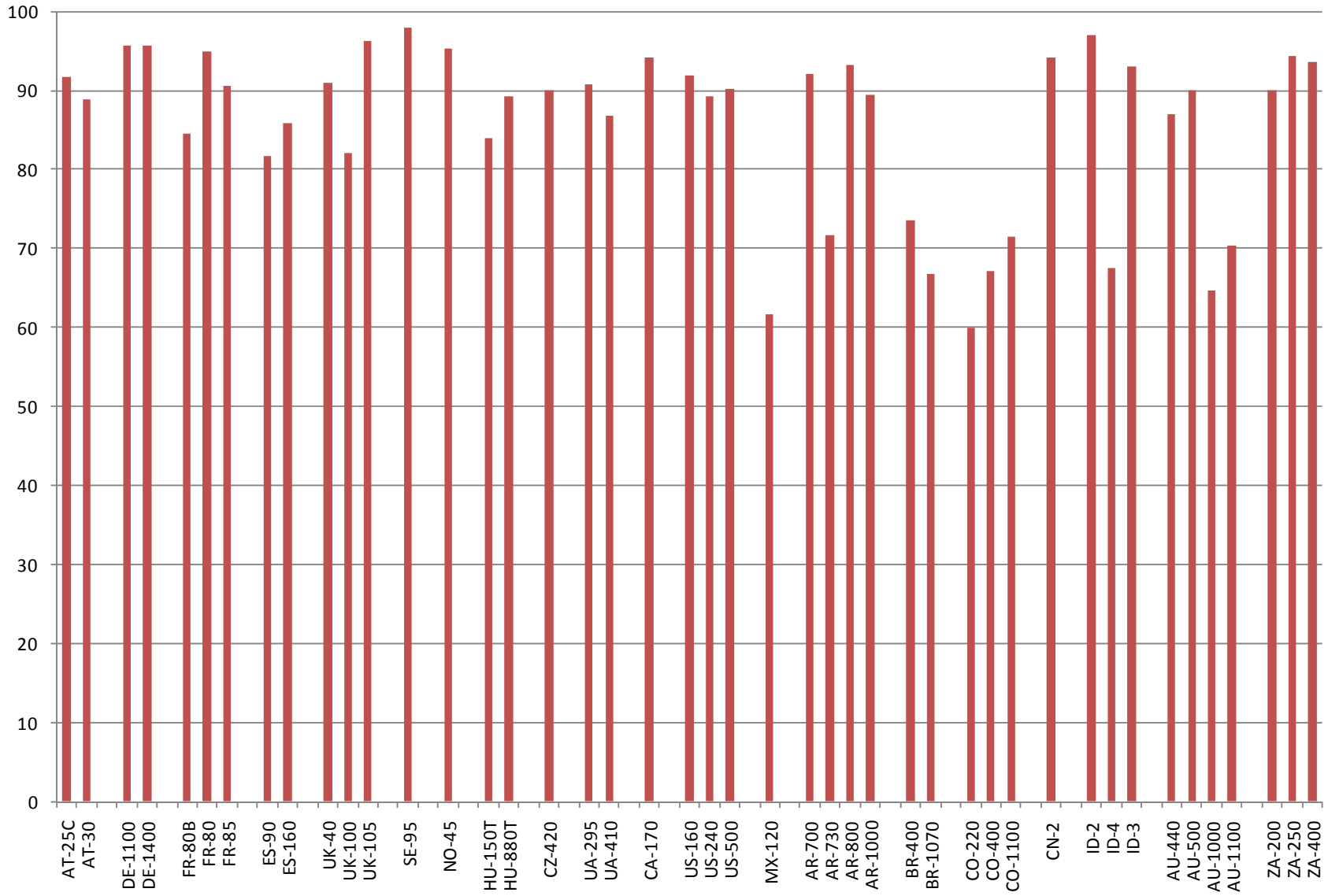
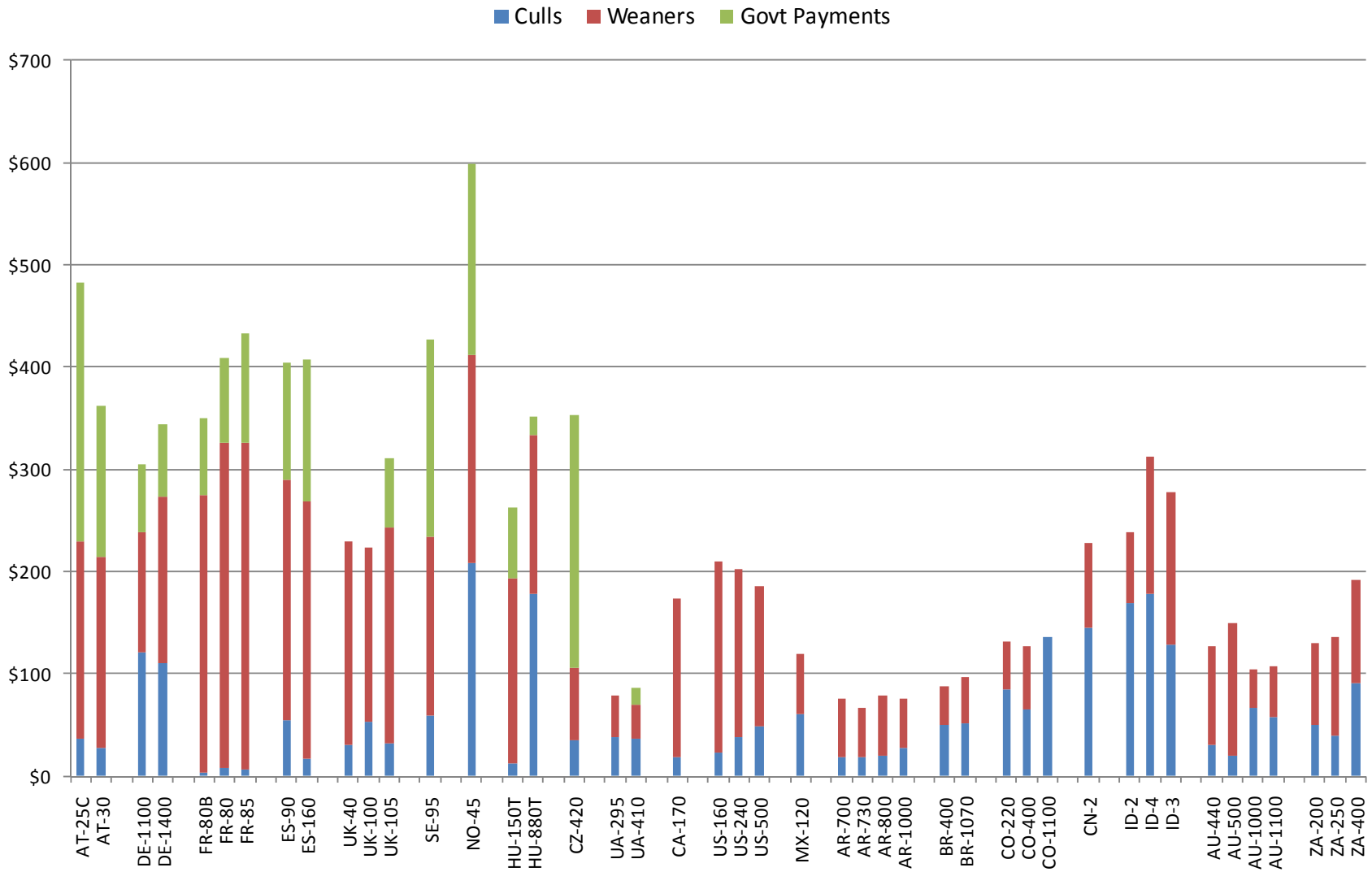


Figure 4. Total Returns by Source, 2009.
(USD per 100 kg of live weight sold)



**Figure 5. Total Returns by Source, 2009.
(Proportions)**

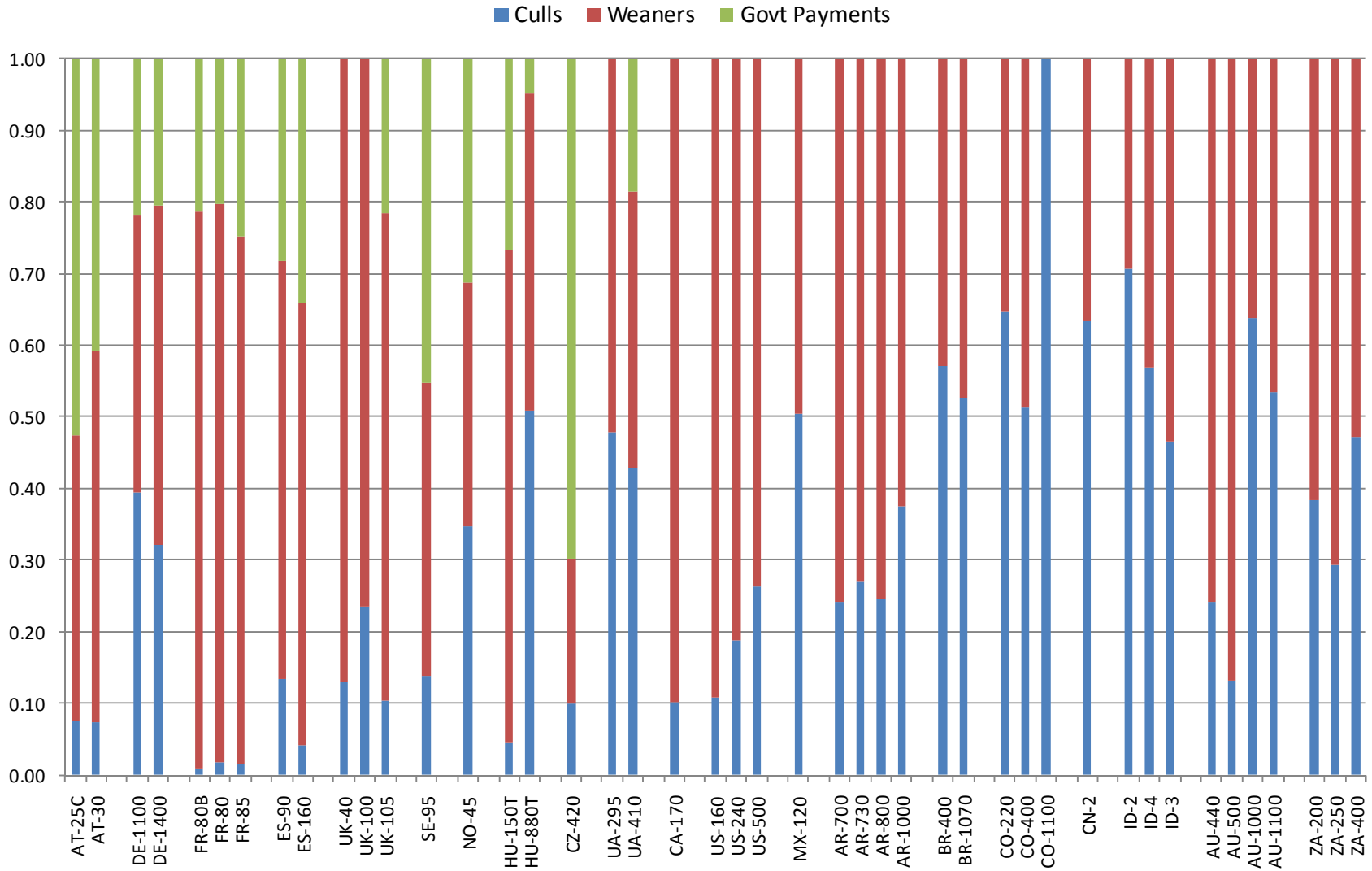
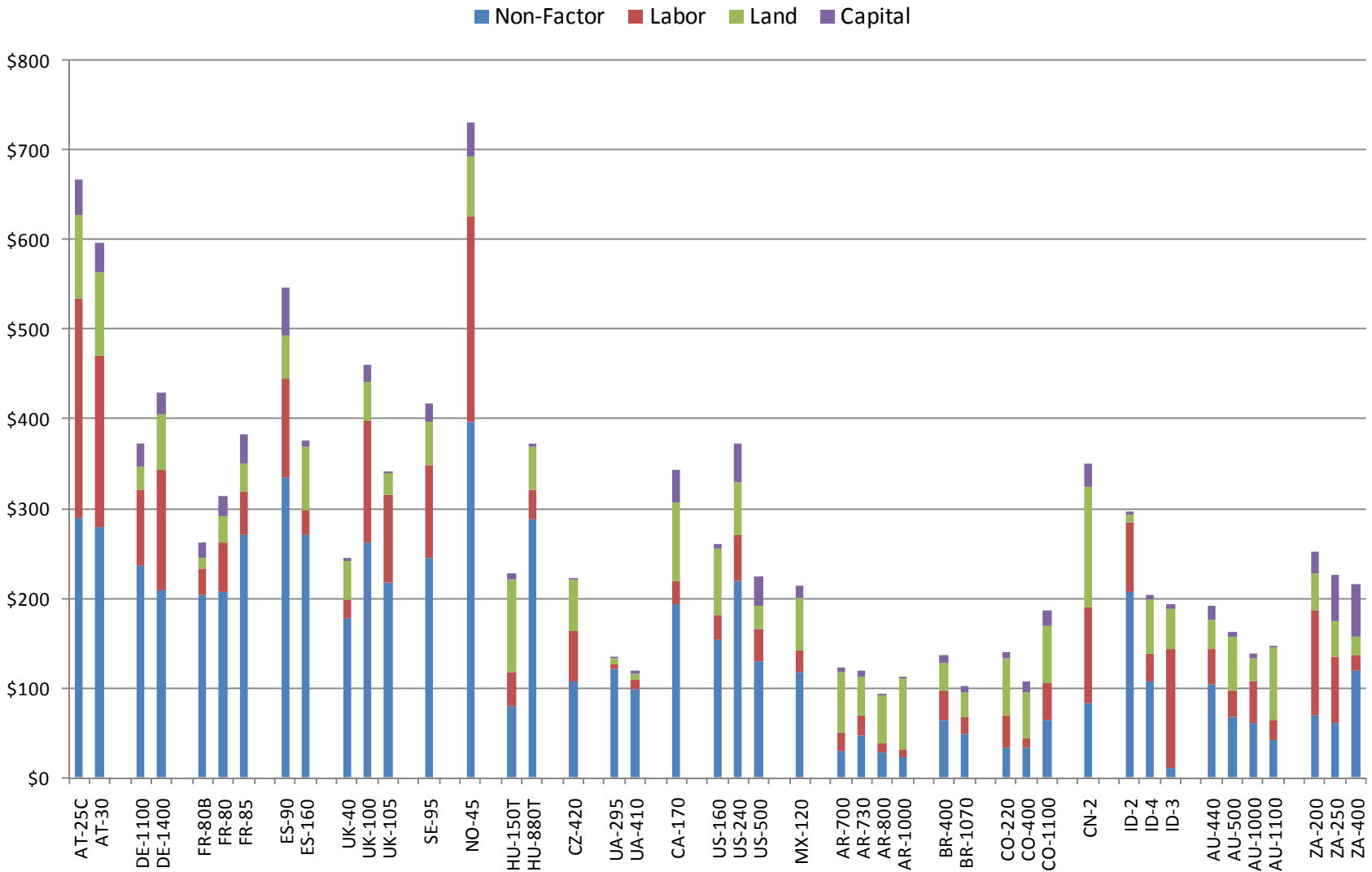


Figure 6. Breakdown of Total Cost, 2009.
(USD per 100 kg of live weight sold)



**Figure 7. Breakdown of Total Cost, 2009.
(Proportions)**

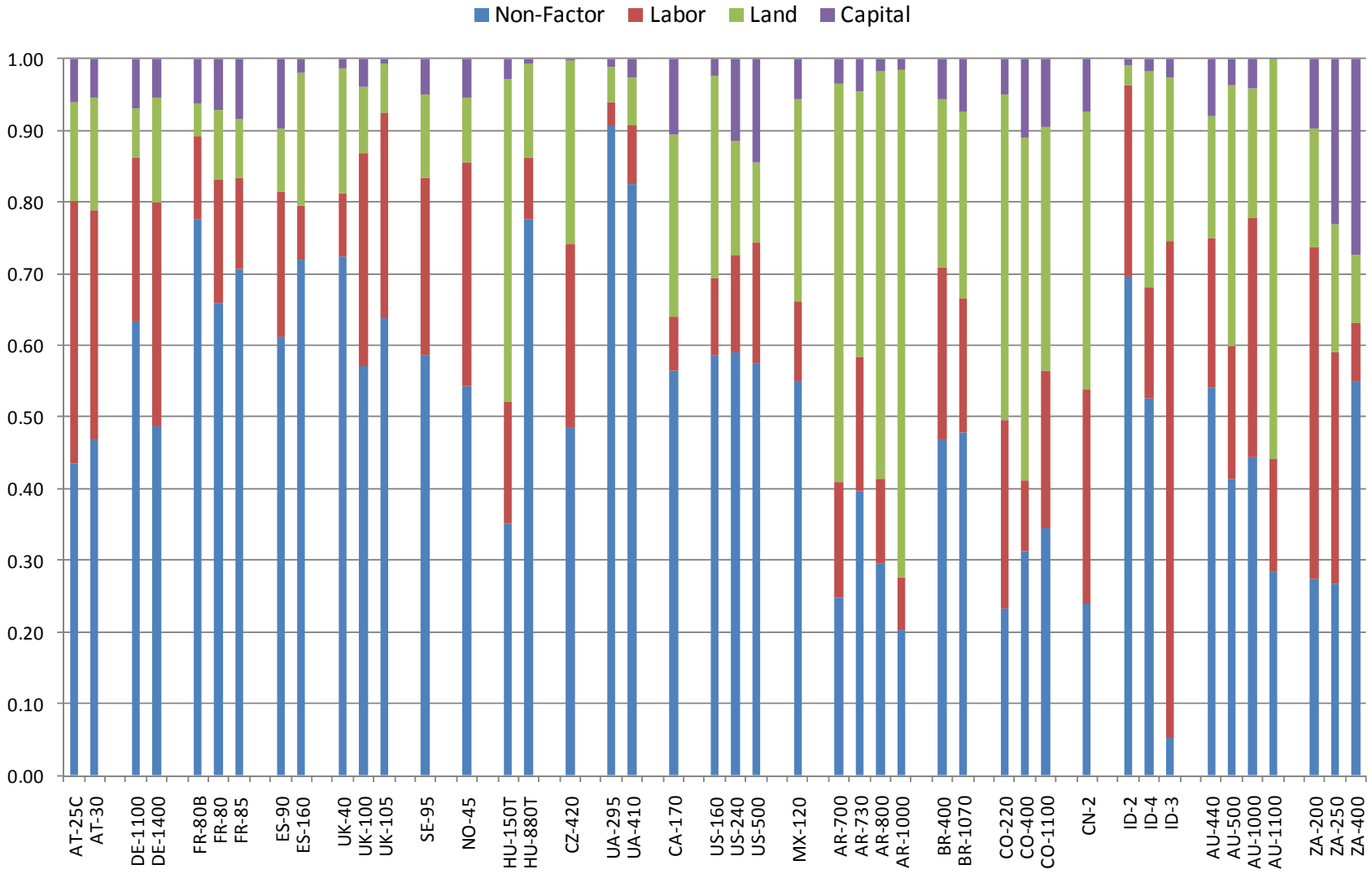


Figure 8. Total Cost and Returns, 2009.
(USD per 100 kg of live weight sold)

