price may disadvantage handlers who do not manufacture cheese. They testified that the higher protein price would not be recoverable in certain products such as nonfat dry milk, condensed milk, or certain Class II products, and that even though the lower protein price still may not be recoverable, it offers the best alternative.

The Galloway witness stated that if a multiple component pricing plan that derives a protein price from a cheese market value were adopted, the protein price should represent a minimum value, should be based on the barrel cheese market, and should not include a value for whey protein concentrate. He argued that such a price would have the impact of minimizing the difference between the protein and other solids prices.

The TAPP/FUMMC witness testified that protein should be priced at a level somewhat below its full value in cheddar cheese and whey for several reasons. He said that too high a protein price could invite the use of non-dairy protein, whey solids, and casein, and thereby cause an increase in the production of imitation cheese. He also said that since some Class II and III products do not recoup as much value from high protein milk as cheese and cottage cheese, the protein price should be set at a level less than its full value for cheese. The witness expressed concern that too high a protein price could result in a zero value for the residual component, or other solids. According to the witness, a zero value for the residual would fail to reflect a realistic value, and would not cover a make allowance.

In the post-hearing brief filed by NAJ, the position of using a "justifiably high" protein price to send a signal to producers that protein is the most valuable component in milk was reiterated. In post hearing briefs filed by CMPC, NFO, Kraft, NCI, TAPP and FUMMC, Anderson-Erickson (A-E), and AMPI North Central Region, the computation of the protein price as proposed by CMPC was supported. The reasons given in testimony for using a lower protein price than that proposed by NAJ were reiterated in briefs. In addition, A-E, Kraft and AMPI North Central Region argued that the difference between the barrel cheese price and the block cheese price is due to the cost of packaging and other nonmilk factors, and therefore the barrel cheese price should be used for determining the protein price.

In pure economic terms the price of a product represents the supply and demand for that product as affected by place, form, and time. The problem with

determining a price for protein contained in milk is that the protein is not marketed as a separate unique product, but is marketed as an integral part of both fluid and manufactured dairy products. Therefore, in determining an appropriate protein price, the value of protein in dairy products is determined by using the value of a product whose yield is a function of the protein content of the milk. At this point in time no attempt is made to reflect the protein content of milk in the value of milk used for fluid use. For this reason, the component pricing plan recommended in this decision does not apply to milk used for Class I purposes.

The level of protein in milk does have a measurable affect on the value of milk used for manufacturing. This value varies among the diverse manufactured products because of differences in the market values of manufactured dairy products and in the contribution made by protein to various finished products. For instance, testimony at the hearing showed that for a one-pound change in protein in the manufacture of cheddar cheese there is a 1.32 pound change in the quantity of cheese produced, whereas in the production of milk powder a one-pound change in the level of protein would change the amount of powder produced by approximately one pound. Since the vast majority of milk in the five orders included in this hearing is used to manufacture cheese, the protein price will be based on the contribution made by protein in the manufacture of cheese.

The 1.32 factor used in both methods proposed for the computation of the protein price for these five orders is derived from a modified Van Slyke cheese yield formula, where the casein is assumed to be 75 percent of the protein and the moisture content of the cheese is 38 percent. Assuming the butterfat is constant, a change of protein by one pound in this formula will change cheese yield by 1.32 pounds. Therefore, the 1.32 factor is appropriate for determining the order protein price.

In determining the level of the protein price, the question of whether to use the average block price versus the average barrel price is a lesser issue than the question of whether or not whey protein should be included in the computation of the protein price, as proposed by NAJ. The average difference between the Green Bay Cheese Exchange average block price and average barrel price during 1992 and 1993 was \$.0388 per pound. Multiplying this difference by the 1.32 factor results in an average difference of \$.05 per pound of protein between the protein prices derived from the barrel and the block cheese prices. Over the same 2 years the inclusion of whey protein in the computation of the protein price would have increased the protein price by an average of \$.4265.

The principal issues that must be addressed in determining the computation of the protein price are the factors that must be included to arrive at a price that most accurately reflects the value of protein in milk. In addition, the effect of the level of the protein price on the other nonfat solids price must be considered. Since the other nonfat solids price is computed as a residual of the Minnesota-Wisconsin price, the other nonfat solids price is inversely related to the protein price. In determining an appropriate protein price and other nonfat solids price, the effects of both prices on payments to producers and margins to handlers buying milk must be determined.

Inclusion of a protein price and an other solids price in determining payments to producers gives producers an incentive to increase their production of nonfat solids, especially protein. There was no evidence in the hearing record to indicate the cost to producers of increasing the protein content of milk. It is therefore difficult to determine what the absolute level of the protein price, or its relative level to the butterfat and other solids prices, must be to encourage producers to increase the protein content of milk.

On average for the 21 months of data available in the record the protein price recommended for adoption in this decision, at \$1.6851 per pound of protein, is twice both the \$.6379 per pound average other solids price and the \$.8374 per pound average butterfat price. Certainly, pricing protein at double the price of the other components in milk gives producers a clear message that protein is the component most desired in the marketplace without over-valuing that component. The significant difference in prices between protein and the other nonfat solids and butterfat components should give producers an incentive to increase protein output.

Testimony by several proponents of component pricing explained that component pricing would be more equitable to handlers than the current skim-butterfat pricing system. The proponents explained that the increased equity would be due to handlers paying for milk based more closely on its economic value to them. This increased equity is reflected in a narrower spread in margins between handlers making cheese from low protein-low solids milk versus handlers making cheese from high protein-high solids milk. Several