

PRINCIPLES OF CALCULATION IN FARM BUSINESS ANALYSIS: FINANCIAL AND ECONOMIC PERSPECTIVES

(Prinsip-Prinsip Perhitungan Dalam Analisis Bisnis Pertanian: Perspektif Keuangan Dan Ekonomi)

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ABSTRACT

Farm business analysis is an analytical approach used to examine the extent to which returns from a farming enterprise can be obtained from the costs sacrificed in the relevant farm business. There are two types of farm business analysis, namely: (a) financial analysis or private analysis and (b) economic analysis. In both financial and economic farm business analysis, the calculation does not only include actual costs or explicit costs, but also notional costs or implicit costs. In financial analysis, the estimated values of costs and revenues are based on the prevailing local real prices. In economic analysis, however, the estimated values of costs and revenues are based on shadow prices. Shadow prices are prices that would prevail in a perfectly competitive market. In this regard, it is important to study comprehensively the principles of calculation used to estimate costs and revenues in farm business analysis, both from financial and economic perspectives. This scientific article aims to provide a comprehensive explanation of these calculation principles.

Keywords: Farm business, explicit costs, implicit costs, real prices, shadow prices, financial analysis, economic analysis

ABSTRAK

Analisis usaha pertanian adalah pendekatan analitis yang digunakan untuk memeriksa sejauh mana keuntungan dari usaha pertanian dapat diperoleh dari biaya yang dikorbankan dalam usaha pertanian terkait. Terdapat dua jenis analisis usaha pertanian, yaitu: (a) analisis keuangan atau analisis pribadi dan (b) analisis ekonomi. Baik dalam analisis usaha pertanian keuangan maupun ekonomi, perhitungan tidak hanya mencakup biaya aktual atau biaya eksplisit, tetapi juga biaya hipotetis atau biaya implisit. Dalam analisis keuangan, nilai estimasi biaya dan pendapatan didasarkan pada harga riil lokal yang berlaku. Namun, dalam analisis ekonomi, nilai estimasi biaya dan pendapatan didasarkan pada harga bayangan. Harga bayangan adalah harga yang akan berlaku di pasar yang sangat kompetitif. Dalam hal ini, penting untuk mempelajari secara komprehensif prinsip-prinsip perhitungan yang digunakan untuk memperkirakan biaya dan pendapatan dalam analisis usaha pertanian, baik dari perspektif keuangan maupun ekonomi. Artikel ilmiah ini bertujuan untuk memberikan penjelasan komprehensif tentang prinsip-prinsip perhitungan tersebut.

Kata kunci: Usaha pertanian, biaya eksplisit, biaya implisit, harga riil, harga bayangan, analisis keuangan, analisis ekonomi

INTRODUCTION

Mosher (1968), as cited in Supriono (2005) and Supriono et al. (2008), states that farm business refers to peasant agriculture, derived from the English term farm. A farm is defined as a place, or part of the earth's surface, where agriculture is carried out by a particular farmer, whether the farmer is a landowner, a sharecropper who manages land owned by another party under a sharecropping arrangement, a tenant farmer, or a paid farm manager.

Firdaus (2004), as cited in Supriono (2005) and Supriono et al. (2008), explains that a farm is a place where a person or a group of people attempts to organize and manage natural resources, labor, capital, and expertise or skills for the purpose of producing a particular agricultural commodity. The natural resources required include land, water, and sunlight.

Farm business analysis, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), is an analysis used to examine the extent to which the value of farm returns can be received from the costs sacrificed in the farm business concerned. The returns referred to are the value of farm revenue. The difference between total farm revenue and total farm costs sacrificed in farm production is referred to as farm income.

Furthermore, Hernanto (1993), as cited in Supriono (2005) and Supriono et al. (2008), explains that farm management science studies the methods of determining, organizing, and coordinating the use of production factors in farming as effectively and efficiently as possible in order to produce the highest possible quantity of farm output or achieve the highest possible productivity and/or the best possible quality of farm output. Effectiveness refers to the ability to allocate and manage the production factors owned as appropriately as possible according to optimal needs, without shortages or excesses. Efficiency refers to the condition in which the value of costs sacrificed for the provision or procurement of production factors allocated and managed in the farm business is much lower than the value of revenue obtained from the farm business. In other words, with the minimum possible cost, the maximum possible revenue can be obtained.

Farm business analysis, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), is an analysis used to examine the extent to which farm returns can be received from costs sacrificed in the farm business concerned. The returns referred to are farm revenues. The difference between total farm revenue and total farm costs is referred to as farm income. This is consistent with Nabut (2021), who explains that farm income analysis is used to determine the amount of income obtained by calculating the difference between total revenue and total costs incurred in farming activities.

Soemodihardjo (2004), as cited in Supriono (2005) and Supriono et al. (2008), further explains that there are two types of farm business analysis, namely: (1) financial analysis or private analysis and (2) economic analysis. Financial analysis, according to Kadariah (1999), cited in Supriono (2009), views the analysis from the perspective of the person or legal entity that sacrifices the costs or invests the capital. This analysis focuses on the private return obtained from the private costs invested, which must be received by the investor. This private return is the value of private revenue. In financial farm analysis, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), input prices, namely the prices of farm production factors, and output prices, namely farm product prices, are calculated based on prevailing local real prices. Therefore, financial farm analysis is generally carried out through the calculation of production costs, revenue, income, break-even point, and business feasibility using the Revenue-Cost Ratio (R/C Ratio) to determine the level of profitability and feasibility of a farm business (Noy et al., 2019).

Economic analysis, as explained by Gittinger and Adler (1993), cited in Supriono (2009), examines an investment activity from the perspective of the economy as a whole, or represents the value of benefits from the viewpoint of the entire economy. It considers the true total benefits obtained by the economy as a whole, regardless of who provides the resources or makes the investment. The true benefits obtained are referred to as the economic return or the social return.

In economic farm analysis, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), input prices and output prices are determined based on shadow prices. Shadow prices are prices that prevail in a perfectly competitive market. As explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), real local prices cannot be used to estimate the economic return or social return because local real prices are believed to almost always contain distortions and therefore cannot reflect the true social costs sacrificed. These distortions may arise from government intervention in market mechanisms, including policies such as taxes and subsidies. Therefore, to estimate the true social cost sacrificed in producing a commodity, the prices used are those that prevail in a perfectly competitive market. These perfectly competitive market prices are reflected by their shadow prices.

Kadariah (1994), as cited in Supriono (2005) and Supriono et al. (2008), reinforces this view by stating that taxes and subsidies on production inputs and/or outputs cause market failure. This market failure results in the loss of part of the welfare that could otherwise be created through market mechanisms, or causes deadweight loss. The loss of part of the welfare that could have been created through the market mechanism occurs because of reductions in consumer surplus and/or producer surplus. Therefore, Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), emphasizes

that, to estimate the true social cost sacrificed, all transfer payments in the form of taxes and subsidies must be excluded from the calculation.

Kadariah (1994), as cited in Supriono (2005) and Supriono et al. (2008), explains that consumer surplus is the benefit obtained by consumers because they pay a price lower than the price they are willing to pay. Producer surplus is the benefit obtained by producers because they receive a price higher than the price at which they are willing to sell their product.

However, Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), also emphasizes that the mechanism of a perfectly competitive market is very rarely found in reality. Therefore, to estimate shadow prices that represent prices under perfect competition, assumptions based on empirical references that are considered relatively appropriate are required.

PROBLEM IDENTIFICATION

It is fundamentally interesting to pose the following question, which is also established as the problem addressed in this scientific article: What are the comprehensive calculation principles for estimating the value of costs in farm business analysis and for calculating farm revenue, both in the context of financial farm business analysis and economic farm business analysis?

OBJECTIVE

This scientific article is written with the objective of providing a theoretical and empirical explanation of the comprehensive calculation principles used to estimate the value of costs in farm business analysis and to calculate farm returns or revenues, both in the context of financial farm business analysis and economic farm business analysis.

RESULT AND DISCUSSION

Farm Costs

Cost, according to Sutawi (2002), cited in Supriono (2005) and Supriono et al. (2008), is the value of economic sacrifice required to produce and/or obtain a particular good and/or service. Boediono (1993), as cited in Supriono (2005) and Supriono et al. (2008), explains that the costs used to produce a particular good and/or service are referred to as production costs. Therefore, production costs can be defined as all economic burdens or economic sacrifices that must be borne to produce goods and/or services so that they are ready for use or consumption by consumers.

The total economic sacrifice required to produce a particular agricultural commodity in a specific farm business is referred to as farm cost, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008). Farm costs can be grouped into three types, namely: (1) fixed costs, (2) variable costs, and (3) total costs. However, fixed costs, variable costs, and total costs each contain two cost elements, namely: (a) explicit costs or actual costs and (b) implicit costs or notional costs.

Explicit costs, as further explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), are cost flows sacrificed or incurred in farming activities and supported by real evidence of financial transactions. Examples include wages paid to hired labor from outside the family, costs of purchasing farm production inputs, costs of renting agricultural tools and/or machinery from other parties, payments of taxes and levies or dues, and other costs incurred with real evidence of financial transactions.

Implicit costs, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), are resource sacrifices in the production process that have not yet been calculated as costs because there is no evidence of financial transactions. Examples include the wage value of family labor, the value of self-owned farm production inputs, the rental value of owned land, the rental value and/or depreciation cost of self-owned agricultural tools and machinery, and the value of other resource sacrifices that have not been calculated as costs because no financial transaction evidence exists.

Fixed Farm Costs

Fixed costs, according to Boediono (1993), cited in Supriono (2005) and Supriono et al. (2008), are costs whose amount does not depend on the scale of production and therefore remains constant over a certain period. Fixed costs, as stated by Hariyati (2007), represent the costs of fixed production factors, and their amount does not depend on the quantity of products produced.

Farm fixed costs, according to Mubyarto (1989), cited in Supriono (2005) and Supriono et al. (2008), are cost values whose amount does not depend on the quantity of farm output produced. Examples include land rental costs, land taxes, and routine irrigation levies. Soekartawi (1993), cited in Supriono (2005) and Supriono et al. (2008), explains that farm fixed costs are costs that are relatively constant in amount and continue to be incurred regardless of whether the quantity of agricultural output produced is large or small.

Variable Farm Costs

Variable costs, according to Boediono (1993), cited in Supriono (2005) and Supriono et al. (2008), are costs whose amount changes depending on the scale of production. Hariyati (2007) states that variable costs change in response to changes in the level of output produced. These costs represent the costs of variable production factors.

Soekartawi (1993), cited in Supriono (2005) and Supriono et al. (2008), explains that in farming, variable costs are costs whose amount is influenced by the quantity of farm commodity output produced. These variable costs include the costs of seeds, seedlings, fertilizers, pesticides, labor, and the rental of agricultural tools and machinery.

Total Farm Costs

Total costs, according to Boediono (1993), cited in Supriono (2005) and Supriono et al. (2008), are all costs incurred in producing a good and/or service. These costs are the sum of total fixed costs and total variable costs. Hariyati (2007) states that total costs are the sum of total fixed costs and total variable costs.

Hanafie (2010) states that total costs are all costs incurred to generate output in a particular production process. Soekartawi (1993), cited in Supriono (2005) and Supriono et al. (2008), explains that in farming, total cost is the sum of fixed costs and variable costs sacrificed or incurred in the farm business.

Principles for Calculating Farm Costs

The principles for calculating costs in farm business analysis, both in financial and economic analysis, can be explained as follows.

1. Land Rental Costs

In both financial and economic farm business analysis, the land rental cost calculated is not limited only to land that is actually rented from another party with real evidence of financial transactions as an explicit cost. The rental value of owned land and sharecropped land, namely land owned by another party but managed under a sharecropping system, must also be calculated and included as farm costs as implicit costs under the fixed cost component.

In financial farm business analysis, the rental value of land, whether explicit or implicit, is calculated based on prevailing local real prices. In economic farm business analysis, however, Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), states that land rental values, both explicit and implicit, are calculated based on the shadow price of land rent. According to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), in economic analysis, land rent can be considered entirely as a domestic cost component.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), further states that land is a primary production factor, so the economic value of its rental return is the net output sacrificed for its best alternative use or opportunity cost. Therefore, the economic shadow price of land rent is basically a representation of the opportunity cost of the land concerned.

Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), states that the shadow price of land rent can be calculated using its financial rental value, namely the generally prevailing rental value at the land location, within a one-year cropping pattern. The highest financial land rental value in a one-year cropping pattern can be regarded as the land's opportunity cost and can be used to estimate the shadow price of land rent.

However, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), referring to World Bank provisions, if there are subsidies for several production inputs provided by the government and these inputs are related to efforts to increase land or crop fertility, the

estimated shadow price of land rent should be calculated at approximately 85% of the highest financial rental value in a one-year cropping pattern. This is because input subsidies make the financial rental value of land greater than its economic rental value.

2. Taxes and Levies

In financial farm business analysis, land tax payments are not calculated only for owned land as explicit costs. The tax value of land actually rented from another party and sharecropped land must also be calculated and included as farm costs as implicit costs under the fixed cost component.

Similarly, in financial farm business analysis, irrigation levy payments are not calculated only for owned land as explicit costs. The irrigation levy value for rented land and sharecropped land must also be calculated and included as farm costs as implicit costs under the fixed cost component.

To pay routine irrigation levies, as explained by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), some farmers pay in kind, using a certain amount of harvested output. These routine irrigation levy payments in kind must also be valued and included as farm costs as implicit costs under the fixed cost component. The value of the in-kind payment is calculated based on prevailing local real prices.

In financial farm business analysis, payments of land taxes and irrigation levies, both explicit and implicit, are calculated based on prevailing local real prices. In economic farm business analysis, however, Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), emphasizes that land tax payments and routine irrigation levy payments must be excluded from farm cost calculations. This is because, as emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), in economic analysis, to estimate the true social cost sacrificed, all transfer payments in the form of taxes, including levies, and subsidies must be excluded from farm cost calculations.

3. Seed or Seedling Costs

In both financial and economic farm business analysis, the cost of seeds or seedlings calculated is not limited only to seeds or seedlings actually purchased with real evidence of financial transactions as explicit costs. Seeds or seedlings owned by farmers themselves or obtained from grants or assistance must also be valued at their purchase value and included as farm costs as implicit costs under the variable cost component.

In financial farm business analysis, the value of seed or seedling costs, both explicit and implicit, is calculated based on prevailing local real prices. In economic farm business analysis, as explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the value of seed or seedling costs, both explicit and implicit, is calculated based on the shadow price of seeds or seedlings. Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that if seeds or seedlings are produced domestically, their shadow price can be estimated as equal to the prevailing local real price. The cost value of domestically produced seeds or seedlings can be considered entirely as a domestic cost component.

However, if seeds or seedlings are imported, Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), emphasizes that their shadow price is calculated based on the c.i.f. or cost, insurance, and freight price. The cost value of imported seeds or seedlings is entirely a foreign cost component.

4. Agricultural Machinery Rental Costs

In both financial and economic farm business analysis, the rental cost of agricultural tools and machinery is not limited only to equipment actually rented from another party with real evidence of financial transactions as explicit costs (Supriono et al., 2025). Agricultural tools and machinery owned by farmers themselves or obtained from grants or assistance must also be estimated for their rental value and included as farm costs as implicit costs.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), explains that the rental value of self-owned or grant-based agricultural machinery is calculated as equivalent to the depreciation cost of the machinery concerned. For machinery that is assumed to have no residual value at the end of its economic life, depreciation as a proxy for rental cost can be calculated using the straight-line method or the double-declining balance method. For machinery that is assumed to have

residual value at the end of its economic life, depreciation can be calculated using the sum-of-the-years'-digits method.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), further explains that the rental value of machinery as an explicit cost is based on the prevailing local real rental price and is included in farm costs as a variable cost component. The rental value of machinery as an implicit cost is based on its depreciation cost per planting season and is included in farm costs as a fixed cost component.

In financial farm business analysis, the rental value of machinery as an explicit cost is based on prevailing local real rental prices, while the rental value as an implicit cost is based on the shadow price of machinery rental per planting season. In economic farm business analysis, as explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the rental value of machinery, both explicit and implicit, is estimated using the shadow rental price of machinery.

According to Soekartawi (1995), cited in Supriono et al. (2008), if the machinery used is domestically produced, the shadow price of its rental value is estimated based on its production cost. However, in developing countries such as Indonesia, machinery production costs generally do not differ substantially from market prices. Therefore, the shadow price of domestically produced machinery can be assumed to be the same as its local real price, and the shadow rental value can be calculated based on its prevailing local real rental price.

However, Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), also emphasizes that domestically produced machinery, when detailed according to production cost components, consists of: (a) 88% domestic cost component, (b) 5% foreign cost component, (c) 2% tax component, and (d) 5% subsidy component.

As emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), in economic analysis all transfer payments in the form of taxes and subsidies must be excluded to estimate the true social cost sacrificed. Therefore, Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that in economic analysis, the estimated shadow price of domestically produced machinery can be calculated at 93% of its prevailing local real rental price. If the machinery is imported, the shadow rental value is estimated based on its depreciation cost per planting season, with the machinery purchase price based on its c.i.f. price. The rental value of imported machinery can be considered entirely as a foreign cost component.

5. Fertilizer Costs

Fertilizers used in farming generally consist of two groups, namely: (1) organic fertilizers and (2) chemical fertilizers. Both organic and chemical fertilizers generally consist of two types, namely: (a) solid fertilizers and (b) liquid fertilizers.

In both financial and economic farm business analysis, the cost value of organic fertilizer is not limited only to organic fertilizer purchased by farmers as an explicit cost. Organic fertilizer produced by farmers themselves or obtained from grants or assistance must also be valued at its purchase value and included as farm costs as implicit costs under the variable cost component.

Similarly, in both financial and economic farm business analysis, the cost value of chemical fertilizer is not limited only to chemical fertilizer purchased by farmers as an explicit cost. Chemical fertilizer obtained from grants or assistance must also be valued at its purchase value and included as farm costs as implicit costs under the variable cost component.

In financial farm business analysis, the value of organic fertilizer costs, both explicit and implicit, is calculated based on prevailing local real prices. In economic farm business analysis, as explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the calculation is based on the shadow price. Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that for domestically produced organic fertilizer, the shadow price can be assumed to be equal to the prevailing local real price. The cost value of domestically produced organic fertilizer can be considered entirely as a domestic cost component.

For imported organic fertilizer, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), the shadow price is calculated based on its c.i.f. price. The cost value of imported organic fertilizer can be considered entirely as a foreign cost component.

In financial farm business analysis, the value of chemical fertilizer costs, both explicit and implicit, is calculated based on prevailing local real prices. In economic farm business analysis, as

explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the calculation is based on shadow prices. According to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), the shadow price of chemical fertilizer is assumed to be equal to its highest retail price, because the highest retail price for chemical fertilizer is uniformly determined by the government throughout Indonesia. However, it should also be considered that the production cost of chemical fertilizers generally contains: (a) foreign cost components, (b) domestic cost components, (c) taxes, and (d) subsidies.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), further explains the production cost composition of several chemical fertilizers. Urea fertilizer contains: (a) 55.40% domestic cost component, (b) 18.80% foreign cost component, (c) 5.80% tax component, and (d) 20.00% subsidy component. SP36 fertilizer contains: (a) 19.43% domestic cost component and (b) 80.57% foreign cost component. NPK fertilizer contains: (a) 23.77% domestic cost component and (b) 76.23% foreign cost component. Other chemical fertilizers are assumed to contain: (a) 23.87% domestic cost component and (b) 76.23% foreign cost component.

Because in economic analysis all transfer payments in the form of taxes and subsidies must be excluded, as emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that the shadow price of chemical fertilizers can be estimated as follows: (a) urea fertilizer at 74.20% of its highest retail price, (b) SP36 fertilizer at 100% of its highest retail price, (c) NPK fertilizer at 100% of its highest retail price, and (d) other chemical fertilizers at 100% of their highest retail price.

6. Pesticide Costs

Pesticides in agricultural cultivation generally consist of two groups, namely: (1) organic pesticides and (2) chemical pesticides. Both organic and chemical pesticides may be solid or liquid. Organic and chemical pesticides can be grouped into three categories: (a) herbicides, (b) fungicides, and (c) insecticides. In both financial and economic farm business analysis, the value of organic pesticides is not limited only to the cost of purchased organic pesticides as explicit costs. Organic pesticides produced by farmers themselves or obtained from grants or assistance must also be estimated at their purchase value and included as farm costs as implicit costs under the variable cost component.

In financial farm business analysis, the value of organic pesticides as explicit or implicit costs is calculated based on prevailing local real prices. Gittinger (1986), cited in Supriono (2005), states that in economic farm business analysis, the value of organic pesticides as explicit or implicit costs is estimated based on shadow prices. Soemodihardjo (2004), cited in Supriono (2005), states that the shadow price of domestically produced organic pesticides is estimated to be the same as their financial price or prevailing local real price. The shadow price of imported organic pesticides is estimated using the c.i.f. price.

Likewise, in both financial and economic farm business analysis, the value of chemical pesticide costs is not limited only to purchased chemical pesticides as explicit costs. Chemical pesticides obtained from grants or assistance must also be estimated at their purchase value and included as farm costs as implicit costs under the variable cost component.

In financial farm business analysis, the value of chemical pesticides as explicit or implicit costs is calculated based on prevailing local real prices. In economic farm business analysis, according to Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the value of chemical pesticides as explicit or implicit costs is estimated based on shadow prices. Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), explains that the production cost of chemical pesticides consists of: (a) 19.63% foreign cost component, (b) 65.45% domestic cost component, and (c) 14.92% tax component.

In economic analysis, as emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), all transfer payments in the form of taxes and subsidies must be excluded to estimate the true social cost sacrificed. Therefore, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), the shadow price of chemical pesticides can be calculated at 85.08% of their financial rental or real local price.

. Labor Costs

The unit used to calculate labor sacrifices in farming, as emphasized by Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), is male equivalent working days or HKSP. A man working for 8 hours per day is valued as 1 HKSP. A woman working for 8 hours per day is valued as 0.8 HKSP because in agricultural cultivation, female labor is generally used to handle relatively lighter tasks, while male labor is required for relatively heavier tasks.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), further explains that the HKSP unit is also often used as an approach to estimate wages or rental values for the use of animal labor for plowing or agricultural machinery for plowing, harvesting, or post-harvest activities. Animal labor used for 8 hours per day is valued as 4 HKSP. Agricultural machinery used for 8 hours per day is valued as 6 HKSP.

Labor cost values are not calculated only for hired labor or labor from outside the family as explicit costs. The labor cost value of family labor must also be included as farm costs as implicit costs under the variable cost component. The wage per HKSP, both for hired labor and family labor, is calculated based on the prevailing local real agricultural labor wage, plus the cost value of providing consumption such as mamirat, mamiri, and other items as implicit costs. Mamirat, mamiri, and other items are valued based on prevailing local real prices.

In financial farm business analysis, the value of labor costs, both explicit and implicit, is calculated based on the prevailing local real wage per HKSP. In economic farm business analysis, according to Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the value of labor costs, both explicit and implicit, is estimated based on shadow prices.

According to McDiarmid (1977), as cited by Soemodihardjo (2004) in Supriono (2005) and Supriono et al. (2008), the real wage level of skilled labor in both developed and developing countries can reflect the wage level prevailing in a perfectly competitive labor market. Therefore, the shadow wage of skilled labor is considered equal to the real wage received.

For unskilled labor in both developed and developing countries, Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), states that the World Bank recommends estimating the shadow wage using a conversion factor of 0.8 of the prevailing local real wage.

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), further states that agricultural labor in peasant agriculture in Indonesia generally belongs to the unskilled labor category. Therefore, the shadow wage of agricultural labor is calculated using a conversion factor of 0.8 of the prevailing local real wage per HKSP. Labor costs are considered entirely as a domestic cost component.

8. Transportation Costs

In agricultural cultivation or farming, particularly in peasant farming, transportation costs are generally incurred for farmers' round trips to their land and/or for transporting harvested products. The transportation means used may be self-owned or rented from another party. Transportation costs are not calculated only as rental costs paid to other parties as explicit costs. The rental value of self-owned transportation means must also be calculated and included as farm costs as implicit costs under the variable cost component.

The rental value of self-owned transportation means as an implicit cost is estimated as equivalent to its depreciation cost per planting season. If the transportation means is estimated to have residual value at the end of its economic life, it is estimated using the sum-of-the-years'-digits depreciation method (Soemodihardjo, 2004, cited in Supriono, 2005 and Supriono et al., 2008). The rental value of self-owned transportation means such as motorcycles can also be estimated as equivalent to the payment value for motorcycle taxi or ride-hailing services.

In financial farm business analysis, transportation costs as explicit costs are calculated based on prevailing local real transportation rental prices. Transportation costs as explicit costs are included as variable operating costs. The rental value of self-owned transportation means as implicit costs is included in capital values under fixed operating costs.

In economic farm business analysis, Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), explains that transportation costs, whether explicit or implicit, are estimated based on shadow prices. Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), explains that transportation costs contain: (a) 90% domestic cost component and (b) 10% tax component.

In economic analysis, as emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), all transfer payments in the form of taxes and subsidies must be excluded to estimate the true social cost sacrificed. Therefore, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), the shadow price of transportation rental is calculated at 90% of its financial rental price or prevailing local real rental price.

9. Miscellaneous or Contingency Costs

Miscellaneous and/or contingency costs are not calculated only when there is real evidence of financial transactions as explicit costs. Payments made in kind must also be valued and included as farm costs as implicit costs under the variable cost component. The value of in-kind payments is estimated based on prevailing local real prices.

In financial farm business analysis, the value of miscellaneous and/or contingency costs as explicit costs is calculated based on prevailing local real prices. In economic farm business analysis, as explained by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008), the value of miscellaneous and contingency costs, whether explicit or implicit, is estimated based on shadow prices. Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that the financial price of miscellaneous and contingency costs based on prevailing local real prices is assumed to be the same as its shadow price. Miscellaneous and/or contingency costs are entirely domestic cost components.

Farm Revenue

Gittinger (1986) and Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), explain that total farm revenue is the total volume of all harvested output multiplied by its price. Therefore, according to Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), the principles for calculating farm revenue can be explained as follows:

(a) The entire value of harvested output sold commercially is calculated based on prevailing local real prices as explicit revenue.

(b) The entire value of harvested output used for household needs, whether directly consumed or stored, social and religious needs, wages paid in kind, dues or levies paid in kind, and other purposes paid in kind, or all harvested output not sold commercially, is calculated based on prevailing local real prices as implicit revenue.

In financial farm business analysis, farm revenue, both explicit and implicit, is calculated based on prevailing local real prices. In economic farm business analysis, however, the value of farm revenue, whether explicit or implicit, is calculated based on shadow prices, as emphasized by Gittinger (1986), cited in Supriono (2005) and Supriono et al. (2008).

Soemodihardjo (2004), cited in Supriono (2005) and Supriono et al. (2008), states that if the agricultural commodity has strong export potential, its shadow price is valued based on the f.o.b. or free on board price. However, if the agricultural commodity is largely imported to meet domestic needs, its shadow price is valued based on the c.i.f. or cost, insurance, and freight price. With regard to the shadow exchange rate, Kadariah (1994), cited in Supriono (2005), recommends using the exchange rate of the rupiah against foreign currency, generally the rupiah against the United States dollar.

Farm Income

Income is defined as the remuneration of production factors from a particular business activity after deducting all costs incurred (Sukirno, 2013). Farm income is the difference between total revenue and total costs incurred or sacrificed in the farm business (Soekartawi, 1993, cited in Supriono, 2005 and Supriono et al., 2008). Therefore, in both financial and economic farm business analysis, farm income is the difference between total farm revenue and total farm costs incurred.

CONCLUSION

There are three important points that can be concluded from this article:

1. In conducting farm business analysis, whether financial or economic analysis, it is not only actual or explicit costs that must be calculated and included in cost valuation, but also notional or implicit costs.

2. In conducting financial farm business analysis, the calculation used to estimate the value of costs and revenues is based on prevailing local real prices.
3. In conducting economic farm business analysis, the calculation used to estimate the value of costs and revenues is based on shadow prices, namely estimated prices that would prevail in a perfectly competitive market.

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