The family welfare of horticulture farmers: case in Pegalengan District, Bandung Regency, West Java

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Abstract. Bandung Regency is a sizeable horticultural supplier for West Java and DKI Jakarta, Indonesia. Horticultural farming faces the constraints of expensive input prices and price fluctuations. This can reduce the welfare of farmers. This study aims to determine the welfare level of horticulture farmers families in Pengalengan Sub-District, Bandung Regency, from June-September 2019. The research method is a survey. Respondents were taken 10% of the population, i.e., as many as 92 farmers families. The welfare level is measured based on eleven BPS indicators, namely income, expenses, living conditions, housing facilities, household member health, the ease of obtaining health services, the ease in education services, and obtaining transportation facilities, religious life, taste safe, and exercise ease. The poor criteria according to World Bank standard is family expenses of less than 1.9 USD per capita per day. The results show that average income was IDR 9,400,000 per capita per year. The average expenses were IDR 7,283,743 per capita per year. All of the respondents are categorized as non-poor and in the high welfare category.

1. Introduction
Family welfare is an important aspect in the development of a nation's human resources at large. The welfare of farmer families is important because 70% of Indonesia's population work in the agricultural sector. The level of welfare of farmers is an indicator of the success of Indonesian agricultural development. The economic aspect alone is not sufficient in determining the welfare of society [1]. The measure of family welfare is a combination of personal, public, and costs incurred for a job [2]. Therefore, in measuring family welfare, it does not only measure economic aspects, but also social, health and environmental aspects.

The agricultural sector has a major contribution to regional development. According to BPS [3], the number of farmers in Bandung Regency reaches 1.6 million people. Of these, as many as 640 thousand or 40% are horticultural farmers. The poverty rate in Bandung Regency is 6.8%, mostly in rural areas.

When viewed from the Product Domestic Regional Bruto (PDRB), the agricultural sector in Bandung Regency is the fourth highest in West Java Province with a percentage of 37% [3]. This number indicates that the welfare of the people in this region is largely influenced by the agricultural sector. The PDRB of the agricultural sector is relatively stable, even though the Covid 19 pandemic has an impact on people's purchasing power to decline.

Bandung Regency is the largest horticultural supplier to West Java and Jakarta in Indonesia. As many as 40% of farmers in Bandung Regency have a horticultural business, especially upland vegetables.
Horticultural farming is very profitable, with an RC ratio of about 2. However, horticultural farming also faces the risk of uncertain price fluctuations and post harvest damage. This situation can reduce the income and welfare of farmers.

Family welfare is more than farmers' welfare which is only measured economically by the farmer's exchange rate. Welfare uses multidimensional, not just economic factors [4]. These dimensions include material living standards (income, consumption and wealth), health, education, individual activities including work, political voice and governance, social relations and kinship, the environment, both economic and physical. All these dimensions indicate the quality of life of the community and to measure them, objective and subjective data are needed. This study aims to determine family income, family expenses and family welfare of horticultural farmers in Pengalengan District, Bandung Regency, West Java.

2. Research methods

2.1. Place and research respondents
The research site is in Pengalengan District, Bandung Regency, which is the center of horticulture production in West Java. The technique of taking respondents by simple random sampling was 10% of the population of 920 horticultural farmer families [5]. The number of respondents was 92 horticulture farmer families. The research was conducted from April to October 2019.

2.2. Family income
Farmers' family income is income from farming and non-farming from husbands, wives and / or children within a certain period. Farm income is calculated based on commodity, per season, per unit area of land [6, 7].

\[ PK = PU + PNU \]

Information:
PK = Family Income/year
PU = Farm Income/Ha/year
PNU = Non-Farm Income/year

2.3. Family Expenses
Family expenses are costs incurred to meet the needs of a family consisting of husband, wife and / or children within a certain period of time. Family expenses include clothing, food, housing, education, health, savings or investment. Family expenses can be formulated as follows: [8]

\[ CK = CP + CNP \]

Information:
CK = Family expenses
CP = Food Expenses
CNP = Non-Food Expenses

The level of family welfare can be measured in various ways, including by: indicators of the National Socio-Economic Survey [9]; National Family Planning Agency (BKKBN) [10]; National Development Planning Agency [11] with the Good Service Ratio (GSR) method; The Economic Wellbeing Index (EWI) - World Bank [12, 13]. In this study, a comprehensive BPS [9] welfare indicator includes: economy, education, health, environment, transportation and religious life.

Poverty standards according to World Bank when family income < 1.9 USD per capita per day or 693.5 USD per capita per year [13]. Poverty standards according to BPS when family expenses < IDR 3,132,000 per capita per year [9].
Table 1. Welfare Indicators for Indonesian families

| No | Welfare Indicators [5] | Percentage (%) |
|----|------------------------|----------------|
| 1  | Family Income          | 25             |
| 2  | Family expenses or consumption | 16          |
| 3  | The state of residence | 13             |
| 4  | Residence facilities   | 4              |
| 5  | Health of family       | 10             |
| 6  | Ease of getting health service | 4           |
| 7  | Ease of enrolling children in education | 12         |
| 8  | Ease of obtaining transportation facilities | 4         |
| 9  | Religious life         | 4              |
| 10 | Sense of security from crime | 4          |
| 11 | Ease of exercising     | 4              |
|    | Total                  | 100            |

High level welfare: 75 – 100 %
Medium level welfare: 50 – 75 %
Low level welfare: < 50 %

3. Results and discussion

3.1. Family income

Family income includes farm and non-farm income for all family members (husband, wife, children who live together). Non-farm income comes from artisan and general trading. In general, 99% of family income comes from horticultural farming.

Table 2. Average family income per year

|                                    | Farm Income (IDR) | Non farm Income (IDR) | Income of family members (IDR) | Total family income (IDR) | Income per capita (IDR) |
|------------------------------------|-------------------|-----------------------|-------------------------------|--------------------------|-------------------------|
| Minimum                            | 17,478,400        | 0                     | 0                             | 17,478,000               | 4,513,067               |
| Maximum                            | 28,878,400        | 6,000,000             | 36,000,000                    | 58,878,000               | 15,371,467              |
| Average                            | 23,016,661        | 141,304               | 12,158,000                    | 35,315,965               | 9,399,969               |

3.2. Family expenses

Family expenditure or consumption is an activity to meet household needs, both individually and collectively. Expenditures are grouped into two, namely food and non-food expenditures. Expenditures for common needs, namely food, fuel, electricity, village fees, house taxes, vehicle taxes. Individual expenses, namely the cost of education, health care, transportation, clothing, pulses, cigarettes, cosmetics. Family expenses are measured in a specific time frame: days, weeks, months and years.

Table 3. Family expenses per year

|                                    | Food Expenses (IDR) | Non-Food Expenses (IDR) | Total Expenses (IDR) | Expenses per capita (IDR) |
|------------------------------------|---------------------|-------------------------|----------------------|---------------------------|
| Minimum                            | 8,780,000           | 4,374,000               | 13,974,000           | 3,879,667                 |
| Maximum                            | 19,250,000          | 25,764,000              | 41,140,000           | 13,196,333                |
| Average                            | 13,843,565          | 13,321,652              | 27,165,130           | 7,283,743                 |

3.3. Family welfare according to national socio-economic survey BPS [9]

3.3.1. Family income indicators. The most important indicator of welfare is income. Income weighted by 25%. According to the World Bank [13], a family is poor if the income is less than 1.9 USD per capita per day. If 1 USD equals IDR 14,141; the poverty line is around IDR 26,600 per capita per day.
or IDR 806,040 per capita per month or IDR 9,672,000 per capita per year. If it is less than that number, it is categorized as poor.

Table 4. Family income

| No. | Poverty standard according to World Bank | Score | Numbers of families | Percentage (%) |
|-----|-----------------------------------------|-------|---------------------|----------------|
| 1.  | Non poor (income per capita per year > IDR 9,672,000) | 4     | 44                  | 47.82          |
| 2.  | Almost poor (income per capita per year IDR 7,254,000–9,671,000) | 3     | 26                  | 28.26          |
| 3.  | Poor (income per capita per year IDR 4,836,000–7,253,000) | 2     | 20                  | 21.73          |
| 4.  | Very poor (income per capita per year < IDR 4,836,000) | 1     | 2                   | 2.17           |
|     | Total                                    |       | 92                  | 100            |

3.3.2. Family expenses indicators. Table 5 shows that the respondent's family is in the welfare category because the family expenditure is more than IDR 3,132,165 per capita per year. This means that horticultural farming provides high income that contributes to the welfare of farmers. Food expenses on average 45.16 %, less than non-food expenses 54.84 %. One of the indicators of family welfare when food expenses is smaller than non-food expenses [14].

Table 5. Family expenses

| No. | Poverty standard according to BPS | Skor | Number of families | Percentage (%) |
|-----|----------------------------------|------|--------------------|----------------|
| 1.  | Non-poor (expenses > IDR 4,928,000 per capita per year) | 4    | 84                 | 91.30          |
| 2.  | Almost poor (expenses per capita per year IDR 3,132,165–4,928,000) | 3    | 8                  | 8.69           |
| 3.  | Poor (expenses per capita per year IDR 1,795,875 – 3,132,165) | 2    | -                  | -              |
| 4.  | Very poor (expenses per capita per year < IDR 1,795,875) | 1    | -                  | -              |
|     | Total                             |      | 92                 | 100            |

3.3.3. Residential state indicators. Residence includes the type of roof used, cubicles or walls, home ownership status, floor type, and house building area. The five criteria for living conditions are classified into three categories, namely permanent, semi-permanent and non-permanent. The results showed that as many as 95.65% of respondents were included in the criteria for permanent residence conditions, and the remaining 34% were in the semi-permanent category.

3.3.4. Residence facilities indicators. Residence facilities include the area of the yard, entertainment facilities and cooling equipment, lighting, fuel, water sources, and the availability of toilets. Based on these criteria, as many as 71.73% of respondents have complete living facilities, and as many as 28.26 have housing facilities that are in sufficient criteria, and none of the respondents fall into the criteria for insufficient living conditions.

3.3.5. Family health indicators. Family health indicators are frequency of illness and number of sick family members in one year. As many as 91.30% of respondents fall into the criteria of good health, meaning that within a year, the maximum number of household members is sick twice, this is also evidenced by the lack of respondents going to the hospital or clinic for health check / treatment. 8.69% of respondents are in the medium health criteria.

3.3.6. Ease of getting health service indicators. Indicators of easy access to health services include distance to the nearest hospital, distance to the polyclinic / puskesmas / posyandu, the cost of medical treatment, treatment treatment, contraception, family planning consultations, and the price of medicines. All respondents stated that it is easy to get health services and family planning. Respondent households on average consisted of 3 or 4 household members.
3.3.7. **Ease of enrolling children in education indicators.** The indicator for the ease of enrolling children into education is seen from three factors, namely, school fees, distance to school, and admission procedures. Based on the results of the research, it was considered easy by the respondents to enroll children in elementary and junior high school education, but not for high school education.

3.3.8. **Ease of obtaining transportation facilities indicators.** The ease of transportation indicators include costs and fees, vehicle facilities, and ownership status. The types of transportation that are often used in Pengalengan District are public transportation, gojeg, and private motorbikes. All respondents feel that transportation costs and costs are affordable, vehicle facilities are available, and all have private vehicles, at least one motorbike per family. There are also those who own commercial cars. All respondents stated that it is easy to get transportation facilities.

3.3.9. **Religious life indicators.** Indicators of religious life include ease of worship and religious tolerance. All respondents stated that religious tolerance is very high because the entire community is Muslim. There are quite a lot of facilities for worship, namely mosques or prayer rooms, and the distance between mosques and prayer rooms is not too far. They can accept other religions with harmony.

3.3.10. **Indicators of sense of security crim.** Almost all respondents (97.82%) felt safe, did not experience criminal disturbances. Minor crimes that have occurred, such as theft of garden crops. Pengalengan District is known as a safe area.

3.3.11. **Indicators of ease of exercising.** Almost all respondents (95.21%) do not have enough sports, because they are tired of working every day and in rural areas they lack sports facilities. Working as a farmer takes a lot of energy like sports and they feel healthy.

| Table 6. Recapitulation of Welfare Indicator Scores based on BPS [9] |
|---------------------------------|-----------------|-----------------|
| No.                        | Indikator               | Portion ideal (%) | Portion Factual (%) |
| 1.                          | Family Income          | 25               | 25                |
| 2.                          | Family Expenses        | 16               | 16                |
| 3.                          | The state of residence | 13               | 8.2               |
| 4.                          | Residence Facilities   | 4                | 2.5               |
| 5.                          | Health of family       | 10               | 7.5               |
| 6.                          | Ease of getting health service | 4 | 3 |
| 7.                          | Ease of enrolling children in education | 12 | 8 |
| 8.                          | Ease of obtaining transportation facilities | 4 | 3 |
| 9.                          | Religious life         | 4                | 4                 |
| 10.                         | Sense of security from crim | 4 | 4 |
| 11.                         | Ease of exercising     | 4                | 0.5               |
| Welfare level              | 100                     | 81.7 (high)      |

Based on Table 6. All respondents including high welfare 81.7 percent. Economic factors, namely family income and expenses, provided the largest contribution of 41%. Economic aspects such as income, expenditure, and consumption determine the main factor of community welfare [11–13]. Economic development triggers social development, education and health [14].
Table 7. Recapitulation of welfare level

| No. | Welfare Measurement                          | Income, Expenses, and Welfare                                                                 |
|-----|---------------------------------------------|-----------------------------------------------------------------------------------------------|
| 1.  | Family income based on World Bank           | 47.82% of respondents were categorized as not poor, 28.26% were categorized as near poor, 21.73% were categorized as poor and the remaining 2.17% were categorized as very poor. |
| 2.  | Family expenses based on BPS (Central Bureau of Statistics) | 91.30% of respondents are not poor because the expenses more than IDR 4,928,000 per capita per year. 8.69% of respondents are considered near-poor because they spend IDR 3,132,165 - IDR 4,928,000 per capita per year. No family is categorized as poor and very poor. |
| 3.  | Welfare Level based on BPS (Central Bureau of Statistics) | 2.17% of respondents are in the medium level of welfare category. 97.82% of respondents are in the high welfare category. |

4. Conclusions and suggestions

4.1. Conclusions

a. Average income of respondents IDR 9,400,000 per capita per year, or IDR 37,600,000 per family per year. The average expenses of respondents were IDR 7,283,743 per capita per year. All of the respondent’s are categorized as non-poor according to World Bank and BPS.

b. 2. Family welfare according to 11 indicators of BPS, 97.82% is in the high welfare category, and 2.17% is in the medium welfare category.

4.2. Suggestions

Based on the above conclusions, the suggestions that can be given are as follows:

a. Increasing farmer family income through creative economy, among others: horticulture processing when horticulture prices are low and farm diversification.

b. Maintain family welfare, especially economic indicators, namely family income and expenses.

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