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FARM TRANSFERS IN

SWITZERLAND

With a Special Emphasis Upon

Farm Appraisals

by

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" . . . the report of the appraiser must consist not so much in simple estimates or calculations, as in well-reasoned statements directed to explain the conclusions set forth in his appraisal judgement."

Giuseppe Medici

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ABBREVIATIONS

- AIREA: American Institute of Real Estate Appraisers
- AHV: Alters-und Hinterbliebenen Versicherung = Social
Security Insurance
- Fr.: Swiss franc
- ha: Hectar
- IV: Invaliden Versicherung = Disability Insurance
- MRA: Multiple Regression Analysis
- SBS: Schweizerischer Bauernverband = Association of
Swiss Farmers
- ZGB: Zivilgesetzbuch = Civil Code
- LEG: Landwirtschaftliches Entschuldungs Gesetz
- OR: Schweizerisches Obligation enrecht

1. INTRODUCTION

In Switzerland it is common for the farm business to be transferred within the family because the law provides that the heir can purchase the business at its investment value. The investment value is arrived at by an income capitalization approach. The investment values of farm businesses are well below corresponding market values. The purpose of these regulations is to avoid the division of the land among the heirs and excessive debts for the young farm family.

In recent years the investment values of farms have been dropping, resulting in negative or low investment values for many farms. Corresponding market values, however, have been increasing. This situation has led to conflicts of interest among family members. For these and other reasons the investment value has received widespread criticism. Problems with enforcing the laws, based on the investment value, have resulted.

These problems have been recognized by the Swiss government. The Swiss Department of Justice and Police stated in a report (November 1970) that . . . the current regulations dealing with farm appraisals have to be reviewed . . . because of the fast structural changes in agriculture (1). On March 6, 1975 the Swiss Department of Justice and Police appointed a commission of experts to study the current

system for appraising the agricultural value of farms and to make new proposals if necessary (2). In March 1978, this commission published a report concerning the revision of the current farm appraisal regulations. The commission's major concerns were low and/or negative investment values of farms. The experts suggested abandoning the present appraisal methods and proposed the so-called factor proportional distribution. This method is based on the principle that the calculated return to labor and capital is distributed proportionally among the production factors of labor and capital. This proposal solves the problem of too low investment values, however, the author feels that this proposal does not resolve all of the problems. The principle that the price for the farm business should be equal to its investment value (rather than its market value) is not questioned in this paper. The on-farm heir could not make a living if he had to pay the market value of the farm. Farms would be split up among heirs if this occurred.

1.1 Purpose of Study

The purpose of this paper is to discuss the transfer of farms, to explain the present method of appraising farms, to evaluate a number of alternative methods of farm appraisal,

and to make some new proposals within the given legal framework (3). The transfer of farms involves issues such as the goals of transfer, the time of transfer, father-son arrangements, and problems related to father-son arrangements. The present method of appraising farms has shortcomings: a capitalization rate of 4%, the calculation of investment values based on data from the past fifteen to twenty-five years, and the present classification of farms. Other proposals, that base farm values on factor proportional distribution or on rental data will be evaluated. The new proposals, that will be made, should account for the shortcomings of the present method.

1.2 Limitations of the Study

The main emphasis of this study has been limited to a micro-economic analysis of different farm appraisal procedures. Macro-economic issues will be included when appropriate. Different farm appraisal methods will be evaluated on primarily theoretical grounds. Case studies will contribute to the understanding and evaluation of different appraisal methods.

This study has been developed in the United States. Therefore, there was not an opportunity to consult with Swiss appraisers or the SBS Brugg. Proposals could not be tested by appraising actual farms and the case examples are based

on bookkeeping results.

1.3 Organization of the Report

Chapter two deals with the transfer of farm ownership to successive generations. It focusses on when, how, and under what conditions the transfer of farm property should take place. Some legal aspects of farm transfers are presented. In chapter three, the current farm appraisal regulations are discussed and their weaknesses are demonstrated. A number of desired features, which should be considered when developing new regulations, have been formulated in chapter four. Different farm appraisal regulations will be analyzed in relation to these desired features. The proposals made by the commission will be reviewed in chapter five. Finally, favored proposals will be made (chapters six and seven). The last chapter includes a summary, conclusions, and suggestions for additional research.

2. TRANSFER OF FARM PROPERTY (1)

Estate planning is the acquisition, enjoyment, and eventual distribution of one's property to best provide for and protect himself and his family. Property owners are responsible for what happens to their property after their death. The goals of estate planning are to create the best possible conditions for all of the people involved, and thereby transfer the farm property to the next generation with the fewest emotional and financial problems.

The transfer of the farm has important consequences for everyone involved. The parents have owned the farm for years; it is part of their way of life and, therefore, difficult to give up. Furthermore, as long as they own the farm they have the means to support themselves and do not have to rely on others for their livelihood. This gives them independence, security, and importance.

The children, however, are trying to establish a place for themselves and their families either on the farm or elsewhere. It is important for the heirs to be aware of the plans that have been or are being formulated so that they can make arrangements of their own accordingly.

Society also has a stake in the transfer of farm property. Society's goals are to avoid the partitioning of farms among heirs and to put too heavy a debt burden on the young farmer.

As a result, regulations stipulate that an heir can buy the farm business at its investment value and inventory such as livestock, machinery, and technical equipment can be purchased at their use value. Both investment values and use values are well below the corresponding market values; avoiding both the division of the land among heirs and excessive debts for the young farm family.

Parents, children, and society have different, partially conflicting, goals that should be integrated into a plan that will meet the needs of everyone involved. One of the most difficult problems is determining which objectives can and should be attained, which can be met only in part, and which cannot be achieved.

2.1 Goals of Transfer

It is common for management and asset ownership to be transferred gradually to the members of the younger generation. To successfully accomplish this objective the following goals need to be achieved:

- a) Financial security for the parents: The parents should be able to enjoy the fruits of their labor in their old age. Adequate income and security must be derived from social security payments (AHV, IV), savings, income after retirement, and farm assets.

b) Security for the on-farm heir: The heir who devotes his most productive years to the family business on the assurance that "you will be taken care of when we die" faces substantial uncertainty. For example, if a son's investment for capital improvements goes unrecognized, the resulting uncertainty of ownership could create problems within the family. The word son is used here to represent either a son or daughter. The Swiss law provides for equal rights. The son is entitled to a certain degree of security because he is putting his livelihood and that of his family on the line.

As a farmer, the son (and his family) has a desire to own some of the real estate involved in the farm operation. This psychological fact needs to be considered by the parents; otherwise the relationship between the older and younger generation might be destroyed. Strains between the generations may cause the younger family members to leave the farm.

c) Family understanding: The goals of the children, who have remained on the farm, become more important if they plan to continue the farm business beyond the parents' lives. The off-farm children should be informed that some members of the family want to control and own the farm business. If the heirs do not make some kind of an agreement problems could arise at a later date.

All of the children know about the high market value of land, buildings, and equipment. However, if the farm is sold to a son, it is priced according to the income potential of the

farm (investment value). The market value of farms is about three to six, and often ten to twenty, times the investment value of the farm. Professional appraisers should visit the farm and arrive at a justified price. This price must be based upon the income potential of the farm; otherwise the heir taking the farm over could not make a living.

The above mentioned discrepancy between market value and investment value for farm land puts a strain on many farm families. Family ties have to be close. Understanding and tolerance among the family members is crucial. Otherwise their relationship might be destroyed. It is better for the parents to inform the children of any plans regarding the farm business rather than leaving this responsibility for the son who is taking over the business.

d) Equitable treatment of the other children: The heir who receives the farm is favored. Therefore, the needs of the other children must be recognized. The remaining children should be treated equitably and not equally. It is up to the parents to make sure that this principle is respected. A child, for example, who has worked on the farm and made a contribution towards maintaining and improving the value of the parents' assets should receive some type of allowance; through gifts or other financial help. Possible misuses of the "equitable treatment principle" have been recognized by legislator. Three legal aspects are important in this

context: (1) Should the heir sell the farm or part of the farm, the other heirs get part of the profit (art. 619^{bis} ZGB). (2) The on-farm heir pays a price based on the investment value of the business (art. 620 ZGB). (3) A child who has worked on the farm has the right to demand a fair compensation (art. 334 ZGB).

e) Maintaining profits: The farm business has to be kept in a profitable and efficient operating condition during and after the transfer of management and capital. An heir is not usually willing to take a farm over if he cannot make a living out of it. Efficiency and rentability are means of preventing the farm from being divided up among the heirs. To insure profitable and efficient operation plans for shifting ownership have to be developed.

f) Other goals: The transfer of farm property is a personal thing. Other goals or problems may evolve according to the specific family situation. These goals or problems should be recognized and incorporated into a plan that satisfies the needs of everyone involved. A rather common goal, for example, is for the parents to want to stay on the farm after retirement.

2.2 Time to Transfer

The decision to transfer the farm from father to son depends on many considerations. The age of both the parents and the

son is usually a key factor. Before transferring the farm to the son he should be able to meet the following guidelines:

- 1) Have maturity with respect to farm experience, managerial competence, and business judgement.
- 2) Be certain that he will farm.
- 3) Have sufficient capital and an income to support additional debts and other incurred responsibilities that result from ownership.

Parents should answer the following questions:

- 1) Does the father retire completely or partially?
- 2) Do the parents transfer their estate to non-farm or other farm investments?
- 3) Do the parents have adequate sources of income?

A father-son partnership is often formed when the father is not old enough to retire and his income needs are still high. Father-son arrangements are discussed in the following section.

2.3 Father-Son Arrangements

Most relationships involving parents and children fall into the following three distinct types:

- a) The "Spin-off Model": The general assumption for this model is that the relationship will not last forever. It is believed that this arrangement may last for five, possibly

seven, and certainly no more than ten years. During this time the parents work out preferential arrangements with the son. These arrangements start out with a strict employer-employee relationship that eventually develops into a wage plus bonus or wage plus bonus plus incentive arrangement of some type. The son begins to buy his own equipment. His labor is traded for the use of his parents' machinery and equipment. However, he rents land for his own use. The parents might put in a good word with the landlords in the neighborhood and agree to co-sign loans. Throughout this relationship, the parents' farm remains unchanged. This model can be utilized when two sons want to farm, but the farm is not large enough to support two families. In Switzerland this model is not commonly used.

b) The "Super-Firm": The idea is that the family operation will expand enough to support an additional family. The son becomes a permanent figure in the family business. The organizational structure of the business is changed to accommodate joint ownership of the resources and multiple participation in management. The organizational structure of the "Super-Firm" is the farm partnership or the farm corporation.

Farm Partnerships: A farm partnership is an ideal method for gradually shifting the ownership of assets and the management of the total business to the son. Most young

incoming partners do not have much capital to contribute; they may purchase a share of the parents' capital invested in the business and then contribute this to the partnership. Over time the son acquires a greater percentage of the farm through both paying off the note and expansion of the farm business.

The son builds up his equity absolutely and percentagewise while the father's percentage of total equity of the farm firm declines. Note that it is important for the plan to be financially and legally sound and in written form in order to protect everyone involved. It should specify who is contributing what to the partnership; how the business is to be operated, how profits and losses are to be shared; and duties, powers, and limitations of the partners.

Farm Corporation: This organizational framework is not being used in Swiss family farms. It might be a possibility in the future. Therefore, a few comments are appropriate. Ownership in the business is represented by shares of stock. At an annual meeting a board of directors is elected and they are responsible for running the business.

Majority stockholders can vote against the minority stockholder's interests. Before setting up a farm corporation the advantages and disadvantages should be analyzed carefully. Some issues are business development and growth, tax savings, efficient management, business control, continuity, and the like.

c) Landlord-tenant relationship: Under this model the parents lease the whole farm business to the son. They often function as financiers in helping the son acquire machinery, livestock, and feed. The father usually wholly or partially retires from the day-to-day work and management of the farm. Father and mother usually continue to live on the farm provided that there is adequate housing.

The rental arrangement is a fairly satisfactory agreement when the father wants to retire, but needs a source of retirement income. It might also be to the son's advantage to rent rather than to buy at this time. However, father and son need to think about some type of arrangement to eventually transfer ownership, as the son's future in farming may be closely tied to acquiring control of the real estate and other business assets.

The most common procedure in Switzerland is some form of a partnership. The son works on the farm either part-time or full-time. He provides labor and in some cases he also contributes capital. As time goes on he begins to buy his own equipment and becomes more important in managing the farm. The parents and the son develop some kind of a wage plus bonus or wage plus bonus plus incentive arrangement. Often, compensation for the son's labor and management is deferred until the business officially changes owners. At some point in time the parents and the son decide that the son should

buy the farm. The farm business is either appraised by an appraiser or the father sells the business to his son at a price that they have agreed upon.

2.4 Problems With All Types of Arrangements

These problems have the potential to destroy the relationship between the parents and the on-farm heir. They are of crucial importance in father-son relationships and cannot be emphasized too much.

a) Communication: Complete and frank communication is crucial. The parties need to know each other's needs and expectations. Compromises have to be worked out. Communication is important from the earliest possible time--before expectations have hardened into immovable positions, and before misunderstandings have led to bad feelings.

b) Income Sharing: Often, the annual income is divided between father and son. Even an economically perfect income sharing gets out of adjustment. The father gets older and starts working shorter hours. The son works longer and longer hours and his children might work also. The son's part in managing the farm grows. All this has to be reflected in the income sharing plan; otherwise tensions will arise.

c) Management: The responsibility for the management of the farm generally goes along with both the capital and the

labor. The person providing the most capital and/or labor likes to "have the say". It is important not to exclude any partner from the decision making process. This, again, is a communication problem. As time goes on, the gradual transfer of the management from father to son is vital.

d) Investment Opportunities: The younger generation wants to buy into the operation or otherwise gain control of the assets. This opportunity must be available; otherwise uncertainty tends to build up for the heir living on the farm. He might loose interest in farming and the two-generation arrangement will end.

If the farm business is going to be sold to a son, the farm has to be appraised either by an appraiser or by the family. To restate the basic proposition of the Swiss laws concerning the succession of farm businesses: A farm business can be bought by an heir at a price arrived at by the income capitalization approach (see next chapter).

Methods of transferring the home farm within the family are identified according to when they are implemented:

- a) The transfer may be completed during the lives of the parents through sales, gifts, a combination of sales and gifts, or an option to buy.
- b) The transfer plans may be made during the lives of the parents, but do not take effect until death, through wills and

trust agreements.

c) The transfer may be initiated by the state laws of descent after the death of the parents. The state laws of descent provide farm transfer arrangements. The law spells out how the transfer will be made unless the parents by will, trust, or some other method provide for a more suitable transfer plan.

2.4 Some Legal Aspects of Farm Transfers

The agricultural law of descent provides a framework for the transfer of the farm business to an heir at the businesses' investment value. The regulations also try to minimize conflicts of interest among family members. Some legal aspects of farm transfers are presented below.

The main idea of the right of succession is established in article 620 ZGB: An heir has the right to buy a farm business at its investment value. The investment value will be defined in chapter three.

An heir who wants to farm cannot be deprived from this right by either a will or a contract. This regulation is based on article 621^{bis} ZGB. However, an heir needs to meet the following conditions:

- 1) The farm business must be of an agricultural character (for example: land developed for residential homes or industrial businesses is excluded from the agricultural law of descent).

2) The farm business must be an economic unit (land, farm buildings, and house must exist) that allows for a sufficient level of living. A sufficient level of living is achieved when a family with two children can make a living.

3) The heir must appear to be able to run the business.

If two or more heirs want to farm the testator has the right to make a choice among the heirs (article 621^{bis} ZGB). In a courtcase a competent authority will decide who gets the farm business. An heir who intends to operate the business himself has priority. If two or more heirs want to farm, personal considerations such as ability, experience, education, marital status, and abilities of the spouse play a role.

If the farm business is run together with another business, and both businesses provide a sufficient level of living, they can be purchased by an heir, however, the farm business is bought at its investment value while the other business is sold at its market value. Examples of closely related businesses are mineral deposits, gravel deposits, and restaurants. In a courtcase the competent authority decides upon the assignment, sale, or separation of the related businesses (article 625 ZGB).

If no heir wants to take over the farm business or if an heir's claims are rejected, any heir can ask for the sale of the farm business as a whole (article 625^{bis} ZGB).

An heir, who buys the farm business at its investment value

or at an value lower than its market value, has to share profits should he sell the real estate or part of it within the following twenty-five years (article 169 ZGB). Profit consists of the difference between the sale price and the transfer price. Improvements that were made by the heir are taken into consideration.

If the on-farm heir sells land, but buys some other land (for the purpose of farming) of the same agricultural quality he only needs to share the difference between the sale price and the purchase price with the co-heirs (article 619^{ter} ZGB).

The on-farm heir may remodel a farm building with the profit or part of the profit from a sale of real estate. He has to share the difference between the sale price and the remodeling cost with his co-heirs (article 619^{quater} ZGB).

The seller (parent) is entitled to the profit if the real estate that he sold to an heir changes hands again (article 218^{quinquies} OR). The parent's claim has priority over the co-heirs' claims.

These regulations make sure that an heir can buy the farm business at a reasonable price. Several rules make sure that the heirs are treated equitably. Conflicts of interest among family members are kept to a minimum; seller and co-heirs get part of the profit should the real estate be sold by the on-farm heir.

2.5 Summary

The transfer of farm property involves many issues. The following ones have been mentioned:

- the goals of transfer
- the time to transfer
- father-son arrangements
- some potential problems in relation to father-son arrangements
- some legal aspects of farm transfers

One of the major problems is how to establish a fair price for the farm. A price that meets the wants of both the parents and the children while complying with the legal guidelines has to be established. The current farm appraisal regulations are outdated. Their shortcomings will be illustrated. This discussion--together with the stated goals of farm property transfer--will serve as a basis for developing a number of desired features that the new regulations should have. It will also serve as a basis for evaluating possible regulations and for making new proposals.

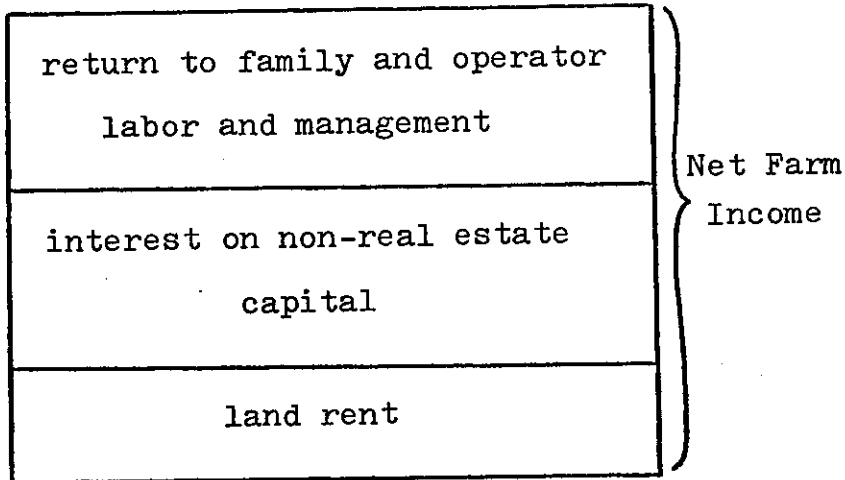
3. THE PRESENT REGULATIONS

3.1 Definition and Significance (1)

The investment value is the land rent capitalized at a rate of 4%. The land rent is a residual arrived at by subtracting the following expenses from gross farm income: operating expenses, fixed expenses, return to operator and family labor, return to management, and interest on non-real estate capital. In other words: The land rent is a residual arrived at by subtracting return to family labor and operator labor, return to management, and interest on non-real estate capital from net farm income. Note that the return to family and operator labor, the return to management, and the interest on non-real estate capital are arbitrary charges (Fig. 1).

The accuracy of the land rent depends upon the basic data used in the calculations. The land rent is calculated over a long period of time in order to avoid variations from year to year. By calculating the land rent for the past fifteen to twenty-five years an average land rent can be derived. The land rent does not depend upon superior management or mediocre combinations of productive factors because it is calculated using typical use, management, yields, prices, and expenses.

Fig. 1 Derivation of Land Rent



The investment value is important in agricultural policy. It allows an heir to buy a farm business at a price which assures its further rentability. The macro-economic purposes of the agricultural right of succession are to avoid the partition of the farm businesses and to prevent placing a heavy debt burden on the heir.

The investment value plays an important role for farmers in getting loans and in putting an upper limit on leases for land. Loans to farmers may not be higher than 1.25 times the farm's investment values. Leases for land may not be higher than $5\frac{1}{2}\%$ the land's investment value.

Fig. 1 Derivation of Land Rent

The land rent has been defined as a residual arrived at by subtracting the following expenses from gross farm income: fixed expenses, operating expenses, return to operator and family labor, return to management, and interest on non-real estate capital. The following example is based upon the data of farms which meet these two requirements: (1) They are valley-farms and (2) Less than 30% of the gross farm income is due to special crop and intensive fattening. The data is based on the years 1969 to 1976 (2).

Gross farm income		Fr.106,017
Material input	Fr.51,168	
Hired labor	Fr. 6,733	
Return to operator, family labor, and management	<u>Fr.37,261</u>	<u>Fr. 95,162</u>
Net return		Fr. 10,855
Interest on non-real estate capital (5½%)		<u>Fr. 6,403</u>
Return to land and buildings		Fr. 4,452
Investment value	$\frac{\text{Fr.4,452} \times 100}{4}$	= Fr.111,300
Investment value of forest	1.39ha x Fr.5000	= <u>Fr. 6,950</u>
Investment value without forest		Fr.104,350
Investment value per hectar	Fr.104,350 + 16.96ha	= <u><u>6,153Fr./ha</u></u>

The investment value is adjusted according to the conditions on different farms in different regions. Return to operator and family labor was determined as a function of parity income conditions of production, and other factors. This was done in order to shorten the differences in investment values between different farms and to avoid negative investment values for many farms in the mountaineous parts of the country. Other adjustments are made to account for differences in types and ages of buildings, soil types, parcels, and so forth.

3.3 Gross-Income Multiplier--A Short Cut

The investment value of a given farm business is arrived at by using a method based upon gross farm income. This method was developed by Laur and is based upon a strong correlation between the gross farm income and the investment value within groups of comparable farm businesses. Laur defined the ratio between the investment value and the gross farm income as the gross-income multiplier.

Farm businesses are classified into "homogeneous" groups. The gross income multiplier of a sample of farms is calculated within each group. The appraiser has to appraise the gross farm income and multiply it by the appropriate gross-income multiplier. Gross farm incomes are determined by considering average prices and costs, average yields, and typical

management for a base period.

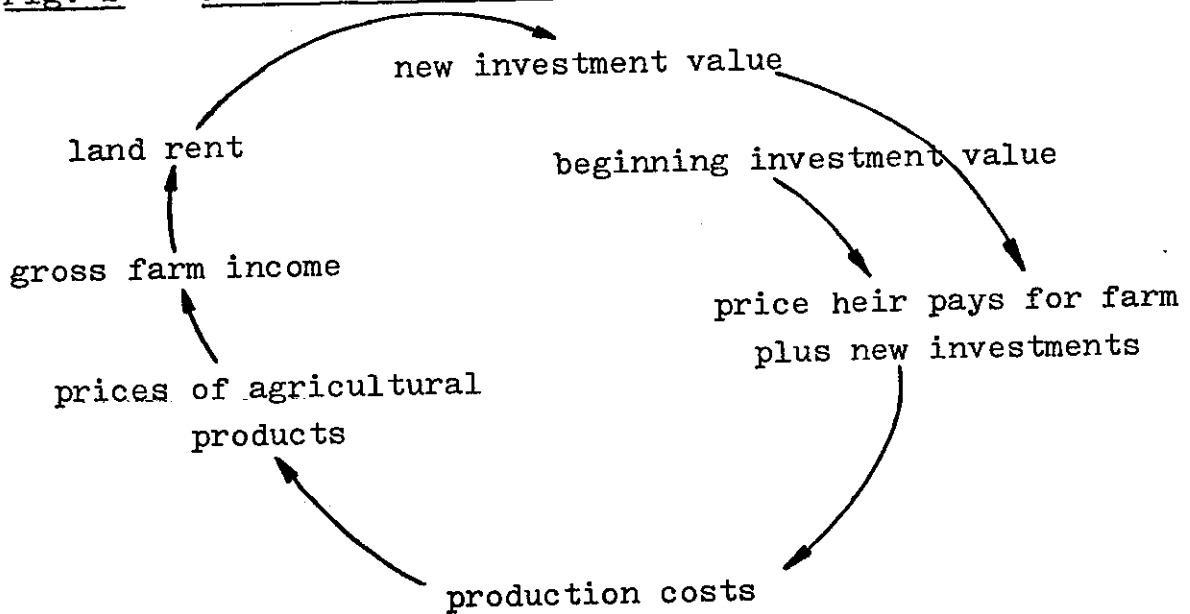
3.4 Criticism of the Present Method

3.4.1 Criticism of the Starting Points

Whenever the levels of the investment values are criticized the criticism can be traced back to how the land rent, the capitalization rate, the gross farm income, and other factors were calculated.

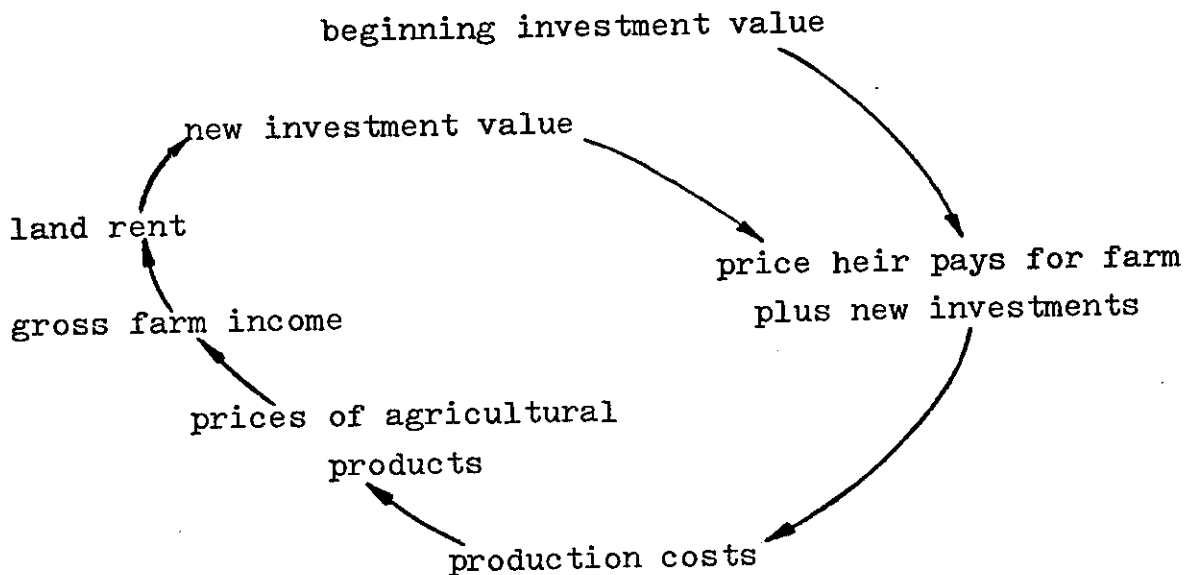
a) The devil's circle: The current method for calculating the investment values and the regulations fixing the prices of agricultural products, which are produced under efficiently managed farm businesses, should cover their average production costs (3).

Fig. 2 Circle if Price Parity is Achieved



The price the heir pays for the farm and investment costs influence the production costs of agricultural products. High production costs lead to high prices for agricultural products and higher gross farm incomes. High gross farm incomes lead to high land rents and, therefore, create high investment values.

Fig. 3 Circle if Parity is not Achieved



In the recent past the goal of parity prices has not been achieved. As a result the investment values had a tendency to decrease. The return to operator and family labor was below the incomes of qualified industrial workers in rural areas during the last nine years.

The land rent depends on the cost of production. Relatively

high production costs and relatively low prices for agricultural products lead to low land rents. Many factors have an impact on production costs and prices for agricultural products such as structural and technological change and government programs.

b) Dropping investment values and increasing return to labor:

Net farm incomes have increased while the investment values have dropped during the last ten years. The investment values on submarginal farms have been negative for many years. The current levels of investment values are often considered too low by the co-heirs and the parents.

The comparison between investment values and market values of farm businesses illustrates this point. The market value of land depends mainly on non-agricultural higher and better uses and on high marginal land values for farming (Table 1).

Decreasing investment values are caused by sub-parital incomes. Returns to family and operator labor have been increasing for many years (calculation based on opportunity cost principle). The land rent as a residual decreased and lead to low or negative investment values for many cases.

c) The calculation of investment values based on the past:

With the current method, land rents are based upon average prices and patterns of production for the past fifteen to twenty-five years. Land rents are capitalized at a rate of 4%. It is assumed that incomes and expenses will not change

Table 1 Investment Values and Market Values

Years	Investment Values of Dairy Farms in North and North-eastern Switzerland		Investment Values of Dairy Farms in the Pre-Alps and the Alps		Market Values in the Canton Bern	
	Fr.	%	Fr.	%	Fr.	%
1951	5,523	100	3,518	100	8,281	100
1954	5,728	104	3,571	102	11,739	142
1958	6,707	121	3,560	101	19,342	234
1964	7,877	143	4,353	124	16,213	196
1970	7,422	134	3,979	113	27,270	329
1976	7,400	134	1,200	34	20,101	241

From: Bericht der Expertenkommission für die Revision des Eidgen. Schätzungsreglementes an das Eidgen. Justiz- und Polizeidepartement, Brugg, 1978.

in the future.

The assumption of stable economic conditions did fit reality better in the past than it probably will in the future. Past and present incomes should only be used as indicators of probable future incomes. The investment value must be defined as the present worth of the net returns it will produce in the future (this is discussed in chapter 6).

d) Capitalization rate: The capitalization rate according to Article 6 LEG is 4%. When the law was passed this rate corresponded with the interest rate for first mortgages which was very stable. Interest rates for first mortgages have been approximately 5½% for the last ten years.

The capitalization rate of 4% and the government's inability to adjust to changing interest rates has been widely criticized. However, even when the capitalization rate was adjusted to the average rate for first mortgages it would still be too low. The discussion on how to select an appropriate capitalization rate is presented in chapter 6.

3.4.2 Criticism of the Gross Farm Income Method

Currently, the gross farm income multipliers are used as a simple short-cut for the income capitalization method of estimating the investment values of family farms. The multipliers are based on the assumption that a fixed relationship

between the annual gross farm income and the investment value exists for similar farm businesses.

a) Gross income multipliers: Several appraisal authorities have denounced the use of gross income multipliers as an appraisal technique because of their concern with gross rather than net rents and their failure to deal with variations in expenses. Babcock's opinion is that the method should not be used even for quick estimating except for very typical properties. It ignores the importance of the expense ratio. The principal objection to the method is, then, that it treats gross revenues rather than net incomes (5). May describes it as the most fallacious rule-of-thumb ever devised for the estimation of value based on income (6). Ratcliff argues that the gross income multiplier is as reliable as it is simple and direct provided it is properly employed in the process of predicting market value (7). American appraisal text books usually discard the gross rent multiplier with brief comments on its usefulness for first approximations of value and warnings concerning its unreliability which results from the differences that exist among properties with respect to their operating ratios (ratio of the operating expenses to the revenues). Ratcliff argues (when discussing the appraisal of the market values of residential properties): why should operating ratios vary significantly among comparable properties of the same size, type, construction, age, and location? An intelligent appraiser should not be expected to

attempt to apply a gross income multiplier unless it was derived from a sample of properties closely resembling the subject property (8). Obviously, a homogeneous sample that closely matches the subject property will produce the best results. Another consideration is the sample size. Ratcliff concludes that for residential properties a sample of ten well-selected comparables would produce a gross income multiplier of acceptable reliability for predictive purposes (9). If the comparables resemble the subject property closely, a smaller sample may be used to determine the gross income multiplier, and conversely, the more diverse the characteristics of the comparables the larger the sample must be. The gross income multipliers can be used when the following conditions are present: (1) Rent-value relationships are known to be similar for major classes of farm businesses and (2) The subject farm is similar in all essential respects to the farms used in developing the gross rent multipliers.

b) Classification of farms: The current classification of farms no longer corresponds to reality in agriculture. Therefore, the appraiser is having more difficulty classifying farms. Specialized farms are difficult to classify, given the current classes. The current classification system needs to be changed and adapted to the current agricultural conditions.

c) Farmers and the current appraisal method: The reference to

a fifteen to twenty-five year base period causes doubts concerning the method's validity. Farmers seem to have difficulties in understanding the relationship between gross farm income, the gross income multiplier, and the investment value. Furthermore, farmers are not able to check an estimation of the investment value for their business because the multiplier is given for them.

d) Requirements for appraisers: At the present, appraisers do not receive a special education for fulfilling their job. Appraisers are chosen by the SBS Brugg and are employed part-time. A detailed and rather mechanistic manual helps them determine the gross farm income. The gross farm income is multiplied by the appropriate gross income multiplier in order to arrive at the investment value.

All methods have some ambiguities the appraiser has to solve by making value judgements. Studies need to be made to determine whether or not appraisers should receive a special education and if they should seek recognition as professionals.

3.5 Summary and Conclusions

The investment value has been defined as the land rent capitalized at a rate of 4%. The land rent is the rent accruing to the property and is defined as the residual arrived at by subtracting operating expenses, fixed expenses,

return to operator and family labor, return to management, and interest on non-real estate capital from gross farm income. Return to labor and management and interest on non-real estate capital are based on the opportunity cost principle.

The importance of the concept of investment values has been stressed. Two macro-economic goals are pursued, namely the avoidance of partitioning farm businesses and the prevention of a heavy debt burden on the farmers.

Laur developed a short cut for appraising farms. It is based on a strong correlation between gross farm receipts and the investment values for classes of similar farm businesses. For appraisals the relationship is as follows: Gross farm income times gross income multiplier equals investment value.

The present regulations have been criticized. The current method of calculating the investment value, together with the regulations fixing prices of agricultural products creates a circular effect. High gross farm incomes lead to high land rents and, therefore, high investment values. However, if the goal of parity between production costs and prices of products is not achieved, the investment values tend to drop. Falling investment values, increasing net farm incomes, and rising market values for farm properties lead to or accentuate conflicts of interest between the parents and the heirs and among the heirs themselves. Investment values arrived at by the current method are based on the bookkeeping results

from the past fifteen to twenty-five years. Land rents are capitalized at a rate of 4%. The interest rate for first mortgages has been very stable for the last ten years at approximately 5½%.

Several appraisal authorities have denounced the use of the gross income multipliers as an appraisal technique because of the multiplier's failure to deal with variations in expenses. Others argue that the gross income multipliers can be used as long as the farms, from which the multiplier is derived, are similar in all relevant respects to the farm being appraised. The mentioned report proposes abandoning the classification because of the difficulties with accurately classifying farms. At the present time, people knowledgeable in agriculture appraise farms as a part-time job. A study should be made to determine whether or not appraisers should receive a formal education and if they should seek recognition as professionals.

Farmers do not easily understand the relationship between gross farm income, gross income multipliers, and investment values. The long reference period of fifteen to twenty-five years is subject to doubt also.

For these reasons this method has received widespread criticism and problems with enforcing the laws based on the investment value have resulted. The credibility of the

investment value itself is being questioned. The appraisal procedures have to be changed. New regulations must take into consideration the criticisms of the present method and the goals for transferring the ownership of farm property discussed in this chapter. The above analysis leads to a number of desired features for new regulations. These features are outlined in the following chapter.

4. DESIRED FEATURES OF NEW REGULATIONS

New appraisal regulations should take into account the shortcomings of the present method. The new regulations should include the goals for transferring farm property and be objective. This chapter briefly describes the desired features that the new regulations should have, ideally.

Tests of objectivity: All regulations should be subjected to tests of objectivity and the regulations should be implemented only after they have passed these tests. To be objective, the regulations must pass the following tests:

Consistency: Consistency is an internal and an external test. The internal test (coherence) is a matter of logic or analytic. The external test is a test of experience; an existing concept is compared with concepts based on past experiences.

Clarity: Regulations pass the test for clarity if they can be understood and communicated from one person to another. Regulations should be easy for everyone to understand. They should not be difficult for appraisers to use. Both of these features will increase the political acceptability of these regulations which is rather important in view of

the problems that the current method encounters.

Workability: Regulations are implemented in order to achieve certain goals. If these goals do not materialize, the regulations have failed to pass the test of workability.

Validation and verification of new regulations means failure to disconform after rigorous testing. Whether or not all of the above tests are applicable depends upon whether people actually experience goodness and badness from the regulations. Proposals, that are made, will be subjected to these tests and the following features, which can be viewed as part of the test of workability.

Investment value: The principle that the heir, remaining on the farm, can purchase the business for a price that is based upon its income potential remains unchanged. This principle causes discrimination against the other heirs and the parents who would be better off financially if the business was sold at its market value. However, the investment value supports the society's goals because it discourages the break up of farms and it prevents a heavy debt from falling on the young farmer's shoulders.

Family understanding: A good understanding among the family members depends on honest and complete communication. Only through good communication can the family members become aware of each other's wants and expectations. Good family

understanding also depends on how well the conflicting interests can be incorporated into the final settlement. The heirs living away from the farm have to realize that the on-farm heir, who is purchasing the farm property, cannot make a living if he has to pay the market value of the land. The attainment of a good understanding depends on the cooperation of the people involved.

Security for the following generation living on the farm:

The young farm family needs to be assured that they will acquire the farm at a reasonable price on a specified date. Successful achievement of this goal also relies heavily on cooperation.

Equitable treatment of all children: Each child receives the

same share (in terms of value) of all hereditary factors. If one of the heirs purchases the farm business at its investment value, all of the remaining children obtain a smaller share than if the business was sold at its market value.

Comparable farm businesses: Similar farm businesses (similar structure, size, organization, etc.) should change hands at approximately the same prices. Therefore, when appraising farms, typical yields, costs, and management need to be determined. This requirement is well established and necessary to maintain the investment value's credibility. The phrase "typical management" is referring to the average

management for a given farm and not to one of the extremes. Sticking to the actual management can be misleading; especially when an excellent manager causes an appraiser to judge a farm better than it is, or when a poor manager causes an appraiser to judge a farm at a lower level than it deserves. Typical management also implies utilizing the land for its highest and best agricultural use. This use will produce the highest net return from agricultural production.

Cash flows: The determination of typical yields, costs, and management should not influence the prospective farmer when he is analyzing his investment in the farm in relation to his unique situation and goals. It is imperative for the heir, who is purchasing the farm, to determine what the maximum worth of the business is to him. If the value he arrives at is lower than the investment value he should not invest. The investor should determine whether the cash outflow, needed for loan payments and production expenses, can be met by his cash inflow. Another important feature to look at when taking over a farm is the excess cash inflow or the credit reserves so that during a bad year the farmer will not be forced to liquidate part of the business.

Future: Investing in a farm is gambling on the future. Therefore, the projected yields, prices, management, and organizational farm structures should be carefully considered.

Summary and Conclusions

The goal of the revision of the present regulations is to achieve the previously mentioned features. Different desired features often are contradictory. Therefore, no ideal solution exists. In order to arrive at a solution compromises will have to be made. Some desired features are crucial, while others are of secondary importance. The tests of objectivity, the compliance of the method with the present legal framework, and the ease with which new regulations are implemented are important. The prospective young farmer needs to carefully budget the returns and manage the cash flows for his unique situation. The decision to farm is a gamble on the future, rather than on the past. Therefore, the future typical productivity and rentability of the farm business needs to be considered when the farm is appraised.

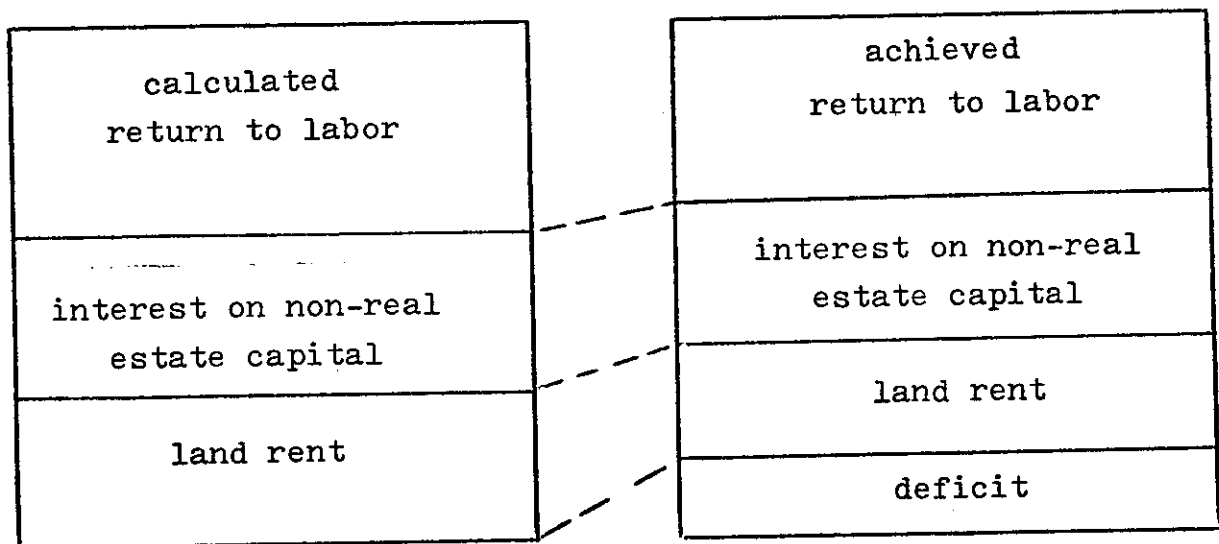
5. EVALUATION OF POSSIBLE REGULATIONS

5.1 Factor Proportional Distribution (1)

5.1.1 Principle

The factor proportional distribution has been proposed by the mentioned commission of experts. This method is based on the principle that the return to labor and capital is distributed proportionally among the production factors of labor and capital. Labor does not have the primacy any more; the value of labor is not fully accounted for when calculating the land rent as a residual. If income parity is not achieved the deficit is distributed among the factors of production; labor and capital. The same principle holds for a surplus.

Fig. 4 Distribution of the Return to Labor and Capital
when Income Parity is not Achieved.



5.1.2 An Example

The actual land rent is newly defined as:

$$\frac{\text{actual return to labor and capital}}{\text{calculated return to labor and capital}} \times \text{calculated land rent}$$

The following data is based on bookkeeping results of the years 1969 to 1976. Data from both valley-farms and mountain-farms is presented (2).

	<u>Valley-Farms</u>	<u>Mountain-Farms</u>
Gross farm income	Fr.106,017	Fr.58,466
Material input	<u>Fr. 51,168</u>	<u>Fr.27,836</u>
Achieved return to labor and capital (RLC)	Fr. 54,849	Fr.30,630
Calculated return to labor:		
Hired labor	Fr. 6,733	Fr. 1,916
Family and operator, and management	Fr. 37,261	Fr.34,160
Calculated return to capital:		
Interest on debts	Fr. 4,494	Fr. 2,571
Rent for land	Fr. 3,222	Fr. 1,469
Return to equity	<u>Fr. 7,700</u>	<u>Fr. 5,526</u>
Calculated return to labor and capital (CRLC)	Fr.59,410	Fr.45,642

	<u>Valley-Farms</u>	<u>Mountain-Farms</u>
Calculated return to land and buildings (5½%)	Fr. 7,498	Fr. 5,347
Paid rent for land	Fr. 3,222	Fr. 1,469
Calculated return to land and buildings (CRLB)	Fr. 10,720	Fr. 6,816
Coefficient (RLC) ----- (CRCL) Valley-Farms = .9232 Mountain-Farms = .6711		
Return to land and buildings (RLC) ----- X (CRLB) (CRCL)	Fr. 9,897	Fr. 4,574
Investment value Rent x 100 ----- 5½	Fr. 179,945	Fr. 83,164
Investment value of forest: Valley-Farms = Fr. 5000/ha Mountain-Farms = Fr. 2000/ha	Fr. 6,950	Fr. 3,320
Investment value without forest	Fr. 172,995	Fr. 79,844
Investment value per hectar	Fr. 10,200	Fr. 5,000

5.1.3 Consequences

If income parity is not achieved the return to labor is decreased and the return to capital is increased as compared to the concept of land rent as defined in chapter 3. If returns to labor and capital are higher than the calculated return based on parity then the return to labor (and interest on non-real estate capital) is valued higher than before and the land rents will be lowered accordingly. If the calculated return to labor and capital are equal to the achieved return to labor and capital, then the land rent does not change when compared to the definition in chapter 3. This proposal leads to less variation in the actual land rent and, therefore, in the investment values, among different farm businesses. Note also that negative land rents are no longer possible. The land rent becomes zero when the actual return to labor and capital is zero.

5.1.4 The Appraisal of Individual Farms--A Short Cut

According to the mentioned report, individual farms are to be appraised by estimating the value of different elements (soil, home, and farm buildings, etc.) separately. The investment value of a "Norm-farm" is distributed arbitrarily among land, home, and farm buildings. Based on this distribution a detailed manual is set up to appraise the value of different elements separately. This manual

contains tables for each quality element. Suppose for example, that one hectare of land of the representative farm is valued at Fr.4,000. "Points" are assigned to different quality elements such as soil, yields, slope, climate, and distance from farm buildings. These points are added together. By dividing Fr.4,000 by the total number of points the value of land per point and hectare is obtained. The appraisal of any other land is based on this value of land per point and the land's quality characteristics.

The most important objection to this method is its iterative procedure. It is difficult to find a common denominator for these quality elements, to weigh their impact upon the value of pure land and to add the different factors together. Farm homes are valued similarly. Points are assigned to quality characteristics such as size, insulation, windows, heating system, kitchen, waste water disposal, and general impression. These points are summed up and multiplied by a factor which is derived from the "Norm-farm". A similar system has been proposed for valuing the farm buildings.

5.1.5 Evaluation

Both the factor proportional distribution and the iterative procedure for appraising farms need to be subjected to the desired features discussed in chapter 4.

Factor proportional distribution: The factor proportional distribution is judged to be more arbitrary than other

appraisal methods (see chapter 6). It does not lead to "correct" levels of investment values. However, not only the investment values will be "wrong", the values arrived at by using this distribution will not reflect the real value differences among different farms. This method leads to investment values with smaller variances among farms than with the current method. Negative investment values are made impossible. The return to labor includes both return to operator and family labor and hired labor. Hired labor needs to be paid. Therefore, it should be excluded from the factor proportional distribution. The same criticism applies to government subsidies which are to support the operator and not off-farm heirs. The mentioned commission notes these shortcomings, but opts for including costs for off-farm labor and government payments. The concern to arrive at too low investment values seems to have been prevalent. The discussed concept does not pass the test of correspondence. The discussion in chapter 6 will reveal that superior concepts exist.

The factor proportional distribution passes the test of clarity; it can be understood and communicated from one person to another. However, it does not pass the test of workability. Children are not treated equitably. One could argue that given subparital returns the on-farm heir pays too much for the business and works for too low a salary. Given over-parital

returns the on-farm heir does not pay enough for the farm and gets too high a return to labor and capital other than land and buildings. The proposal will further the political acceptability of the investment value because submarginal farms will be valued at values greater than zero.

Appraisal of individual farms: The most important objection to this method is its interdependencies among the factors having an impact on the investment value. As a result only a simultaneous consideration of all the relevant factors involved fit reality. Ratcliff argues as follows: The productivity of real estate is generated by the whole enterprise, land and improvements, and that the benefits flow in an indifferentiated stream which is not subject to subdivision and particular allocation. In the case of an automobile it is impossible to measure the separate contribution which the left rear wheel makes to the transportation services and satisfactions which the car provides. Neither is it possible to allocate income to land and to buildings or to measure the productivity of the structure as an entity separate from the services which make ownership a valuable thing. There is no way in which the productivity value of improvements or the value of the land on which they rest can be individually and separately determined. Only the productivity of the whole can be analyzed and only the value of the whole can be derived (3).

The chief argument against valuing land and buildings separately is the difficulty in arriving at a satisfactory (non-arbitrary) estimate of building income. In dividing the value of a farm between buildings and land, the appraiser may be plagued with the problem of surplus buildings.

As previously mentioned there are important interdependencies among the factors influencing the value of the farm business. A concept that is based upon an additive consideration of the effects of these different factors is too simple. The estimation of the partial effects of these factors is difficult and precarious, if not impossible. The proposal requires detailed manuals with low transparency. The procedure is difficult to check empirically. Finally, it needs to be adjusted periodically to new developments such as structural changes in agriculture. Changes may require an adjustment of the weights assigned to the different factors influencing the value of the farm business. This mechanistic approach leads to an appearance which is largely specious.

5.2 Appraisals Based on Capitalized Rental Data

This approach is used in France and the Netherlands. At first view a close relationship exists between rental data and the productivity of farm lots or farm businesses. In reality, however, leases are strongly influenced by local

supply and demand. In Switzerland leases are administered. Prices for land above $5\frac{1}{2}\%$ times its investment value are against the law. The administration of the prices for rented land would have to be abandoned should the valuation of lots and farms be based on leases.

A possibility is to value farms on the basis of rental data of other farm businesses. Typical leases per hectare are known and could be applied for appraising similar farm businesses. The lease value would be capitalized in order to arrive at the investment value. The main objections against this procedure are as follows: Rental data does not necessarily represent the land rent and the data base is insufficient. Rental data is a function of the supply and demand conditions for farm businesses. The number of leased farm businesses is limited. The prices paid for leasing these businesses vary. This variance is not only based on the varying productivity among the farm businesses but also on factors such as the owner (private, public, and church, etc.) or relationships among lesser and lessee (relatives and friends).

A second possibility is to use the rental data from lots. More data of this type is available. Nevertheless, this procedure is rejected because the valuation of farm businesses should be based on the productivity of the farm as a whole. Lot prices are no indication of the productivity of farms.

They are an indication of the marginal value of the land rather than the average value of the land. Prices for lots are also influenced by local supply and demand conditions.

5.3 Summary and Conclusions

In the commission's proposal the return to labor and capital is distributed proportionally among the production factors of labor and capital. As a result, the calculated land rent is derived from the following relationship:

$$\frac{\text{actual return to labor and capital}}{\text{calculated return to labor and capital}} \times \text{actual land rent}$$

This modification renders negative investment values impossible and the value differences among farms become smaller.

Individual farms are appraised by an iterative procedure. Land, home, and farm buildings are appraised separately. The values derived by this procedure are added together in order to arrive at the investment value.

Both the factor proportional distribution and the iterative farm appraisal procedures should be rejected. The factor proportional distribution is judged to be more arbitrary than the method to be outlined in chapter 6. The factor proportional distribution does not pass the tests of coherence, correspondence, or workability.

The iterative procedure does not take into account the interdependencies among the factors having an impact on the investment values. The summation appraisal, which assumes that the value of the entire enterprise is the sum of the independently determined values of land and buildings has been discredited in American appraisal literature. Only a simultaneous consideration of all the relevant factors involved fits reality.

Appraisals based on capitalized rental data are not feasible for several reasons. The number of rented farms and/or lots is limited. Therefore, the data base is limited. Leases do not always reflect the productivity and rentability of farms; they are also influenced by local supply and demand conditions for land.

Having analyzed the current regulations, new proposals made by the commission, and other appraisal methods it can be concluded that a study of other farm evaluation methods needs to be made. This involves looking at the problem of farm appraisals from all sides, introducing all of the factors in the problems, trying to give each of these factors their correct weight, and subjecting the proposals to the desired features as outlined in chapter 4.

6. FAVORED PROPOSALS

6.1 Introduction

It is far easier to criticize the work of others than to offer alternative principles of theory and practice. Real estate appraisal, by virtually unanimous agreement, is the process by which a present value is placed upon the future benefits from real property . The apparent logic of such an approach establishes the capitalization of income method for the appraisal of the investment values of farm businesses.

In earlier chapters farm appraisal methods based on the past rather than the future were discussed. In this chapter a method of capitalizing projected net incomes is proposed. Then the analysis of the future economic base reveals that the proposed appraisal procedure can be simplified. The estimation of future net incomes and the determination of capitalization rates will be discussed. Case examples will show that the theoretically ideal appraisal method is not feasible politically. As a result a modified appraisal method will be proposed. Finally, the modified appraisal method will be evaluated with respect to the desired features which were outlined in chapter 4.

6.2 Net Incomes and Sales Price

The price the on-farm heir pays for the farm business should be related to its potential future earnings and its value at the time it is sold. It can be expressed by the following equation:

$$V = \sum_{t=1}^n \frac{R_t}{(1+r)^t} + \frac{P_n - GT}{(1+r)^n} \quad (1)$$

Where:

V = value of farm business

R_t = annual net income (land rent) in period t

GT = capital gains tax

P_n = sales price

This equation can be used to estimate the value of any farm business, given the appropriate estimates of annual net incomes, sales prices, capital gains tax, and capitalization rate. The determination of the above elements in the above equation involves a considerable degree of subjective estimation. The method requires long term future predictions as "inputs" which may be highly unreliable. The use of such a relatively sophisticated framework might give a false sense of accuracy to what are, at best, judgement forecasts. It is assumed that the income flows (R_t and

Pn - GT) are known with certainty when in fact they are uncertain. Another problem is to know if the business will be sold at its market value or its investment value.

6.3 Economic Base Analysis

Returns from real estate are dependent upon the highly complex interaction of economic forces on the international, national, and local level. Economic base analysis is the determination of the probable impact of these forces upon the investment values of real estate.

The overall impact of these forces on net incomes, and Swiss agriculture in general, is expected to be stable in the foreseeable future. Swiss agriculture has a lot of support in parliament and administration. Agricultural organizations and interest groups are strong and play a major role in establishing government programs on behalf of Swiss agriculture. Any developments having a major negative impact on Swiss agriculture will be countered by government action. Swiss agriculture will not be put through the wringer in the foreseeable future. Circumstances that cause a higher rentability of Swiss farms would probably result in a decrease of government support. Achieving parity incomes for farms is the most important goal of Swiss agricultural policy (1). It can be concluded that net incomes will vary around a rather stable average value. Variations will always occur because of

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the unpredictability of agricultural production due to the weather, the cyclical production patterns of many products (hog-cycle; cattle-cycle), and other factors. The future annual net incomes will fluctuate (sometimes quite widely), the average net incomes can be budgeted with a fair degree of accuracy and the average over a period of time will be level. This conclusion is tentative. More research is needed. Wendt states that few, if any, contributions have been made in recent years to the theory of economic base in appraisal literature (2). Most contributions have been made in urban areas (3). The 1967 edition of The Appraisal of Real Estate published by the American Institute of Real Estate Appraisers notes that the appraiser must be well informed of the economic trends. He must keep in close touch with price levels, purchasing power, population trends, building cycles, government regulations, construction costs, and interest rates (4). No contributions have been made in economic base analysis in Switzerland with respect to agriculture and farm appraisals.

In the following, it is assumed that annual net incomes and capitalization rates will be constant in the foreseeable future. These assumptions simplify the appraisal of farm businesses (5).

Babcock and others assume that land will have a constant, perpetual income at a level equal to current returns assuming

the property is developed with a suitable improvement (6). Babcock does not defend the assumption that capitalization rates, as well as land return, will remain constant in the future. Ratcliff believes that the above assumptions are as usable as any where definite trends are not in view (7). The assumption of constant capitalization rates and constant returns may rely on the view that any other prediction is subject to the same weaknesses. Equation (1) then can be written as:

$$V = \sum_{t=1}^n \frac{R}{(1+r)^t} + \frac{Pn - GT}{(1+r)^n} \quad (2)$$

If it is assumed that the useful life of the farm business is so long that a close prediction of the reversion value of the farm cannot be made then the most plausible assumption predicts that the net incomes will continue to perpetuity. This assumption holds true if the land and the buildings are kept in good condition. Buildings need to be repaired and remodeled over time in order to satisfy this assumption. The second part of equation (2) approaches zero as n gets bigger. As a result equation (2) reduces to the following expression:

$$V = \sum_{t=1}^n \frac{R}{(1+r)^t} \quad (3)$$

It can easily be shown that, as n goes to infinity, equation (3) reduces to the familiar capitalization formula (8).

$$V = \frac{R}{r} \quad (4)$$

6.4 Estimating Farm Receipts, Expenses, and Net Incomes

The income approach has two foundations: (1) Farm receipts and expenses and (2) A capitalization rate. First, farm receipts and expenses are briefly discussed. Then methods on how to derive a capitalization rate are presented.

6.4.1 Receipts and Expenses

Cash farm receipts are based on the farm's productive capacity--the typical prospective acreage of various crops raised, the typical prospective yields per acre, the typical prospective livestock numbers, and the typical prospective rates of livestock production (9). These figures lead to are kept in good condition. Buildings need to be repaired and remodeled over time in order to satisfy this assumption. is desired. Small errors in the estimation of cash farm receipts lead to big errors in the final value estimate.

Commodity prices often vary. However, they follow a predictable pattern because most commodity prices are administered. Emphasis is to be placed on the prices which have been in

existence during the most recent five to ten years and an analysis of the projected development of prices. However, a five or ten year arithmetic mean or mathematical average should be examined carefully. Abnormal variations in the weather, in the yield of the crop, or in the numbers of livestock marketed may influence a single year's price. A five year average may be too short to take out price cycle swings. On the other hand, a preference for long period averages gives increasing weight to the past and less to recent years. The current year is judged to be more significant than a distant year in explaining current farm real estate values. If the most recent year or years are judged to be more important, then different systems of weights may be used. In addition to the most recent year, other years in the past might be included but with less weight. Such averages are mechanical. They are calculated by a formula without using any judgement once the decision on the type of average, number of years, and weights (if any) is made. This mechanical feature leads this author to propose estimated or "normal" prices in figuring gross income. An estimated price is the appraiser's best forecast of the price likely to prevail. A "normal" price is one that, for example, the SBS Brugg could select as being the one which will approximate the midpoint between the high and the low prices of the future. The

"future" is defined as the next ten to fifteen years. The price estimates need to be based on an analysis of prices in the past and on future price prospects. Future price prospects are based on what has happened and what is likely to happen. In summary, the selection of prices is a difficult task. Personal judgement has an important bearing on the decision.

Direct government payments may or may not be included. One might argue that they are intended to support the farmer and not the co-heirs. One might also argue that the purpose of these payments is irrelevant and that they are a factor in the income stream.

Expenses should represent what the typical prospective owner-operator will spend in order to maintain and run the business. Included costs are: seed, fertilizer, chemical and irrigation costs, harvesting expenses, storage and handling costs, machinery expenses, livestock expenses, change of inventory, hired labor, real estate taxes, insurance, and depreciation.

Depreciation deserves a few comments. This author proposes to replace depreciation by upkeep and remodeling costs. By following this procedure the appraisal of the farm as a unit is simplified because building life and depreciation rates need not be estimated. The computation of building life and depreciation rates can be avoided by assuming a

set of buildings that are maintained indefinitely just like the soil. This means upkeep costs will have to be provided to maintain all buildings and improvements in a proper state of repair. Upkeep costs will take care of replacing a roof when necessary, or pointing up the foundation, and so forth. Upkeep costs would represent the annual average allowance necessary to keep the buildings in their present condition. It might be argued that buildings become obsolete. This is true. Obsolescence, however, can be provided for by increasing the annual allowance and by using the allowance to remodel and rearrange existing buildings. As long as the annual allowance is spent, these buildings can be expected to house the livestock, provide storage for grain and equipment, and furnish the house for the farm family. It may be argued that this method is a close approximation to reality in those instances where buildings are well constructed and may last for many years if properly maintained.

The management fee is included in the return to operator and family labor. Expenses for hired labor, the value of all unpaid family labor, and the value of the operator's labor and management must be reimbursed prior to any capitalization of net income. An interest charge on all non-real estate capital used in conducting the farming operations should be subtracted from the farm's income in order to isolate the residual return to the real estate itself.

The net income figure used in the capitalization approach is the residual return which accrues to the real estate--the land, buildings, and improvements--after paying all expenses. Cash farm operating expenses are subtracted from cash farm receipts. The return to operator labor and family labor and the interest on all non-real estate capital are then subtracted from farm income; the residual is the dollar return to the real estate.

6.4.2 The Capitalization Rate

A capitalization rate or discount rate is a rate of interest, expressed in percentage terms, that equates a future amount or a future stream of income to its present value. In the field of finance, the capitalization rate is known as the internal rate of return, and in the field of investments it is referred to as the rate of return. The fundamental

identity of a capitalization rate and the internal rate of return are important. However, the capitalization rate is more easily defined than determined.

Babcock repeatedly states that capitalization rates should be obtained from the market (11). The text of the American Institute of Real Estate Appraisers advises that the appropriate rates to employ in an appraisal of market value are rates that reflect market action (12). Ring concludes that in appraisal theory, only one method of capitalization can logically be applied. The selection of the appropriate method of capitalization should not be made haphazardly, nor should the choice be influenced by attempts to obtain high, low, or conservative estimates. Rather, it is the appraiser's duty to study earning-to-price relationships in the open market and to use rates as well as methods of capitalization which reflect typical market practices and operations (13). Clearly, a market approach is impossible for our purposes because investment values and not market values are being appraised.

Conceptually, the capitalization rate is the opportunity cost of money to whatever person or persons are the most likely buyers or owners of the subject property. The rate reflects that yield which could be obtained on a comparable investment in the next best alternative opportunity in the community. The alternatives find expression in investments

with characteristics similar to the subject property.

Currently, the interest rate on first mortgages is used as a guide. However, the farmer's next best investment alternative is not necessarily in mortgages. Usually, it is instead in a savings account in a local bank. The current rates of interest being paid on certificates of deposit come closer to most farmers' opportunity cost of money.

The rate of interest paid on a mortgage is not necessarily the same as the return which a farm investor will willingly accept on his equity. The equity rate may include non-monetary amenities. It may also include what the heir thinks is going to happen to property values in the future. Therefore, the return on a fixed debt is not the same as the capitalization rate. The predominant methods for deriving capitalization rates are the summation method and the band of investment method.

Summation method: With the summation method, a rate is determined by assuming a series of independent rates for the various factors considered. The 1978 edition of the American Institute of Real Estate Appraisers views the capitalization rate as the sum of the following factors (14).

	<u>Percent</u>
Safe rate	X
Add for additional risk	I ₁
Add for burden of management	I ₂
Add for lack of liquidity	<u>I₃</u>
Rate applicable to the investment	<u>TOTAL</u>

The safe rate is typically based on long term government bond yields and easily obtainable. The risk rate reflects the elements of risk and uncertainty, along with the hazards, which require a return above the safe rate before the typical investor will assume ownership. The management rate reflects compensation for the supervision. It is required for the manager of the investment (and not the manager of the property). The non-liquidity rate reflects the length of time that may pass in order to convert a particular property into cash. This method of estimating capitalization rates is highly subjective with respect to its components. However, it provides a theoretical explanation of why a capitalization rate used is in excess of the minimum risk rate. The Institute text views this method as not a currently valid procedure through which a specific rate may actually be derived because of the intangible character of the components (15). Another fundamental criticism of this method for determining capitalization rates is that it omits the most important and relevant elements in the rate determination, namely, the mortgage interest rates and the ratio of debt to total value. For these reasons, most appraisal theorists seem to advocate the derivation of capitalization rates by a technique of averaging debt and equity rates of return.

Band of investment method: With the band of investment theory the capitalization rate is computed as the weighted

average of the gross market interest rates that apply to various portions of the investment. Assuming that the rates at which mortgage funds will be available can be determined and that the going return on equity investments can be approximated, the capitalization rate is calculated as noted below:

Example	% of value	interest rate	product
First mortgage	65	5½	3.575
Second mortgage	20	6½	1.3
Equity	15	8	1.05
TOTAL			<u>6.075</u>

In chapter 4 it was concluded that comparable farms should change hands at approximately the same prices. Hence, the same capitalization rate should be used for comparable farms. For similar farms typical or average percentages of first and second mortgages and equity could be determined.

Conclusions: When determining capitalization rates both the summation and band of investment methods should be considered. The determination of the appropriate capitalization rates for different farm types could be done by the SBS Brugg, which would lead to more consistency in farm appraisal values. In the following examples, capitalization rates of 6% will be assumed somewhat arbitrarily; typical or average

percentages of first and second mortgages and equity are unknown.

6.5 Case Examples

It was argued that, under certain assumptions, the only significant measure of the investment value is represented by the prospective typical net income. The following case examples will apply the familiar capitalization formula of $V = R/r$. It will be evaluated, if the results are feasible from a political viewpoint.

The same data as in section 5.1.2 will be used in these examples. It is assumed that the rentability situation will not change in the foreseeable future. Conceptually, predictions of data need to be looked at. It was argued that depreciation should be replaced by upkeep costs. Here it is assumed that upkeep costs are equal to depreciation.

Example 1

	<u>Valley-Farms</u>	<u>Mountain-Farms</u>
Gross farm income	Fr. 106,017	Fr. 58,466
Material input	Fr. 51,168	Fr. 27,836
Return to labor and capital	Fr. 54,849	Fr. 30,630

	<u>Valley-Farms</u>	<u>Mountain-Farms</u>
Return to labor:		
Hired labor	Fr. 6,733	Fr. 1,916
Operator and family labor	Fr. 37,261	Fr. 34,160
	<hr/>	<hr/>
	Fr. 43,994	Fr. 36,076
 Return to non-real estate investments	 Fr. 6,403	 Fr. 3,000
	<hr/>	<hr/>
Net income	Fr. 4,449	-Fr. 8,446
 Investment value valley-farms	 $\frac{4,449 \times 100}{6}$	 = Fr. 74,150
Investment value mountain-farms	$\frac{-8,446 \times 100}{6}$	= -Fr. 140,800
 Investment value of forests	 Fr. 6,950	 Fr. 3,320
Investment value without forests	Fr. 67,200	-Fr. 144,120
Investment value per hectar	Fr. 3,960	-Fr. 9,030
	<hr/> <hr/>	<hr/> <hr/>

The results are low for valley-farms, but negative for mountain-farms. Any method leading to these results is not politically acceptable because it creates conflicts of interest between heirs that are too strong in the author's judgement. Modifications of this method must be proposed. Necessarily, they will be subject to attack on logical grounds.

however, they will be acceptable to the heirs. Example 2 attempts to make such a proposal.

Example 2

Farmers accepted sub-parital returns to operator and family labor in the past. Returns to family and operator labor averaged around 95% of the incomes of qualified workers on the country side for valley-farms and around 65% for mountain-farms. Apparently, farmers did accept this situation. Therefore, it is proposed to reduce the return to family and operator labor appropriately--this leads to higher land rents. This can also be justified by the fact that farmers have the option to sell the farm business at its market value at a later date. By the same token, the on-farm heir is typically willing to pay more than a farm's earnings value in order to gain the status of a land owner, to become a self employed farm operator, to regain control of his original birthplace, or to live in the country.

The same data that was used in example 1 is presented here. The return to operator and family labor is reduced for valley-farms (95%) and mountain-farms (65%).

	<u>Valley-Farms</u>	<u>Mountain-Farms</u>
Gross farm income	Fr. 106,017	Fr. 58,466
Material input	Fr. 51,168	Fr. 27,836
Return to labor and capital	Fr. 54,849	Fr. 30,630
Return to labor:		
Hired labor	Fr. 6,733	Fr. 1,916
Operator and family labor	Fr. 35,131	Fr. 22,204
	Fr. 41,864	Fr. 24,120
Return to non-real estate investments	Fr. 6,403	Fr. 3,000
Net income	Fr. 6,582	Fr. 3,510
Investment value valley-farms	$\frac{6,582 \times 100}{6}$	= Fr. 109,700
Investment value mountain-farms	$\frac{3,510 \times 100}{6}$	= Fr. 58,500
Investment value	Fr. 109,700	Fr. 58,500
Investment value of forests	Fr. 6,950	Fr. 3,320
Investment value without forests	Fr. 102,750	Fr. 55,180
Investment value per hectar	<u>Fr. 6,058</u>	<u>Fr. 3,460</u>

Evaluation: The reduction of the return to operator and family labor leads to higher per hectare investment values for both valley-farms and mountain-farms. Overall, the investment values for mountain-farms are positive. The derivation of the investment values for submarginal farms may still lead to negative values. The results are judged to be politically feasible. The reduction of the return to family and operator labor is subject to attack. It has been justified by the fact that the farmer has the option to sell the business at its market value and by amenity factors such as being a landowner or a certain lifestyle the heir does not need to pay for. In the judgement of this author no better proposal has been made so far. Therefore, this method passes the test of correspondence. It passes the test of clarity as well. The principle that the heir, remaining on the farm, can purchase the business for a price that is based on its income potential is maintained, but somewhat weakened. The proposal furthers a good family understanding because conflicting interests are less accentuated. The situation for the young farm family is more difficult because of the higher price which they pay for the business. The heirs are treated equitably. Typical yields, prices, costs, and management are used for the appraisal. The appraisal is based on a budget. The heir is well advised to analyze the business in relation to his unique situation

and goals and to decide if he can make it a successful endeavor. It is proposed to institutionalize a cash flow analysis of the business as part of the appraisal report.

6.6 Summary and Conclusions

A valuation method based on capitalized projected net income flows has been proposed. The investor is mainly interested in two items--what the investment will produce in terms of net incomes and what the worth, at the end of the income producing period, will be. The measure of the return is represented by the following equation:

$$V = \sum_{t=1}^n \frac{Rt}{(1+r)^t} + \frac{Pn - GT}{(1+r)^n}$$

Where:

V = Value of farm business

Rt = Annual net income (land rent) in period t

GT = Capital gains tax

Pn = Sales price

Assuming equal net income flows in each period in perpetuity the above equation can be reduced to the familiar capitalization formula:

$$V = \frac{R}{r}$$

The assumption of equal net income flows seems warranted at the present time. The farmers' economic situation is expected to be fairly stable for the next few years.

This type of analysis can only be applied if the following conditions are met:

- 1) The farm business is held indefinitely, for say, more than fifty years.
- 2) It makes no allowance for the possibility of capital gains and losses.
- 3) It unrealistically calculates R over an indefinite period.

When discussing capitalization rates, both the summation method and the band of investment method were discussed.

Case examples revealed that the "ideal" method is not politically feasible. As a result it was proposed to reduce the return to family labor and operator labor. This proposal was justified by the fact that farmers did accept sub-parital returns to family and operator labor in the past, that they have the option to sell the business at a later date for its market value, and that they do not pay for amenity factors such as a certain lifestyle and so forth. The evaluation with respect to the desired features (which were outlined in chapter 4) revealed that the proposed procedure is a compromise which accounts for the different, partly conflicting, goals of farm transfer within a family.

One important problem remains unsolved. Small errors in the estimation of net incomes or the determination of the capitalization rate lead to large errors in the investment values. The fear of disparable opinion among appraisers is expressed again and again in protocols of the Expertenkommission für die Revision des Eidgenössischen Schätzungsreglementes.

Unless negligence or incompetence is involved, there is no reason for embarassment caused by differences in value estimates among appraisers (17).

Negligence and incompetence can be minimized by a good education of appraisers. It is also suggested that the SBS propose capitalization rates for different farm types and provide appraisers with data, case examples, and appraisal outlines. Appraisal errors could also be minimized by using short cuts. This subject is taken up in the next chapter.

7. MULTIPLE REGRESSION ANALYSIS

7.1 Introduction

Multiple regression analysis can be applied to appraisals provided that the farms are classified into homogeneous groups (with respect to relevant factors) and that sample farms (within each group) are appraised by the income capitalization approach. Multiple regression equations can be estimated by utilizing the sampled and appraised farms. Highly qualified appraisers could appraise the sample farms and develop the regression equations under the auspices of the SBS Brugg. The equations could then be used as short cuts for appraising other farms.

The possibility of using MRA as a short cut for farm appraisals is considered for two reasons: (1) The income capitalization approach provides a strong test of the skills, ability, and tenacity of an appraiser. It requires a knowledge of agriculture, considerable judgement, and many calculations. As a result many appraisers are forced to work beyond their capabilities. (2) Short cuts simplify the appraiser's task. Therefore, it is appropriate to describe, comment upon, and evaluate MRA.

7.2 Literature Review

The U.S. Department of Agriculture and the Bureau of Census have used advanced statistical techniques for estimating farm real estate values as early as 1926 (1). Several studies used statistical approaches in estimating farm values; however, they did not appear to have a significant impact on the appraisers in the United States. Similar studies in german speaking countries are scarce. Britsch concludes that the main difficulty is to find reliable equations. The equations are not "safe" enough for farm appraisals (2). Schott and White report on the application of multiple regression analysis to estimate per acre values for different land classes. They argue that in an area (such as their study area) regression analysis is a method of valuation that reaches a degree of statistical reliability unobtainable by conventional appraisal methods. One of its major advantages over orthodox appraisal procedures is that it is more objective (3). The contributions made by William M. Shenkel extend into farmland regression equations. One paper on agricultural land valuation by Dr. Shenkel was directed toward proper tax assessment by computers. The article explained the fundamental aspects of multiple regression analysis, its importance, and practicality in estimating farmland values (4). R.J. Brown's regression analysis shows that land capability is a variable that appears to have a statistically significant influence (10% significance level)

on land values (5).

7.3 The Regression Model

The objective of regression analysis is to estimate the relationship between property characteristics and investment value. It measures the simultaneous influence of a number of independent variables (or factors) on one dependent variable. That is, multiple factors such as soil types, gross income, distance to markets, and number of acres may be "regressed" upon the dependent variable investment value to provide an explanation of the factors affecting value. Because the investment value is affected by many factors, it may be predicted from the multiple regression formula found in most statistical textbooks. The multiple regression formula commonly takes the form:

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n$$

Where:

Y = Investment value, a variable item dependent on other parts of the equation.

a = A constant sum statistically determined by the computer.

b = A multiplier or coefficient statistically determined by the computer.

X = A property characteristic--the independent variables that affect value.

n = A subscript denoting any given number of items.

The purpose of regression analysis is to estimate the values of the regression coefficients which minimize the squared deviations or residuals of the actual values of the dependent variables from the estimated values of the dependent variables.

The procedure for implementing the regression analysis involves eight basic steps. They are:

- 1) Selecting and appraising a sample of farm businesses. Appraisal by some income capitalization approach in order to arrive at an investment value.
- 2) Specifying property characteristics of farms in sample.
- 3) Collecting and verifying the data.
- 4) Selecting and analyzing the variables.
- 5) Coding property characteristics.
- 6) Applying the regression.
- 7) Analyzing the regression results.
- 8) Use of the regression coefficients for the appraisal of other farms.

7.4 Evaluation of Multiple Regression Analysis (MRA)

The uses, applications, and limitations of regression appraisal models have been discussed widely within and outside of American appraisal periodicals for the past

two decades (6). First, some of the advantages of using multiple regression analysis are presented. Then the disadvantages and shortcomings are discussed.

Advantages of MRA: Multiple regression analysis is used on a sample of farms to generate predictive equations, which in turn are used to estimate the most probable investment values for farm businesses. Multiple regression equations are used as a short cut for the capitalization method for estimating value. They simplify the appraiser's task. MRA tends to be objective in that capitalization rates and net income calculations are unnecessary once the regression coefficients are known. Multiple regression techniques are relatively simple to apply. Existing programs are arranged so that the user merely enters common property characteristics and the sales price into a punched card form. The appraiser, who uses MRA, requires no knowledge of capitalization methods, net income, or operating expenses.

Problems with using MRA: First, a brief review of the research that has investigated the shortcomings of the multiple regression models currently in use is presented. How the regression equations might be tested is then stated.

Multicollinearity: Gau and Kohlhepp demonstrated that, for parameters, estimated using multicollinear data, to be used successfully in predicting or forecasting, two conditions must be met: (1) The estimated dependency relationship

between the dependent and independent variables and (2) The interdependency relationships among the independent variables must remain stable (7). Stenehjem points out that to obtain accurate estimates of the individual (regression) coefficients and simultaneously achieve highly dependable estimates involves a greater degree of sophistication in the selection and estimation of variables than previously assumed (8).

Multicollinearity arises when two or more of the explanatory variables are not independent, but intercorrelated.

Multicollinearity results in large standard errors for the regression coefficients, obscuring the true relationship between dependent and independent variables as well as reducing the dependability of the predictions.

Standard errors: The magnitude of the error, in the equations developed, might be too large to permit an accurate prediction of investment values for individual farm businesses. First among the sources of inaccuracy and the problems associated with the statistical method is the "sampling error" which results from the fact that only a small number of farms out of the total are appraised in order to develop the regression equations.

A second source of inaccuracy is due to "investigator error" and is primarily a result of the problems associated with the income capitalization approach. For example, a small

error or change in the capitalization rate can produce a large error or change in the final value estimate. Farm businesses are very heterogeneous. In order to get reliable estimates, farm businesses need to be classified in homogeneous groups. For example, it might be possible to develop an equation for crop farms. Such a division obviously would require considerable knowledge of farm structures and would have to be based on a careful study of the major farm types. The more homogeneous the subject farms are the better the results will be. The more closely the comparables resemble the subject farm, the smaller the sample, from which the multiple regression equation is drawn will be.

Interaction: The key concept in Lessinger's article is "interaction" (9). Interaction involves questions regarding how different real estate combinations are valued. In order for the multiple regression process to work well, every case utilized must have the same regression coefficients.

Lessinger compares MRA with the grocery store: It is essential that the price for each item remain the same regardless of the customer and the combinations of goods purchased. Interaction occurs when the price of any item does not depend on itself alone, but on a pattern of all items bought. Multiple regression involves a system where one price is found for each item purchased. What is the extent of interaction in farm businesses' investment values? Interaction effects occur on

a vast scale. A farm business is a package deal. A farm building is not bought apart from factors such as the land, the land quality, the land size, or the home. How is the interaction effect bypassed? Multiple regression can work only if there is one price for each item considered. The interaction effect is nullified by choosing the proper cases to include in the sample. Only comparables, cases manifesting closely similar interaction effects, can be used.

Evaluation of regressions (10): How should regressions be evaluated? Instead of a sample of n , a larger sample should be taken, for example: $n + k$ cases; n of these examples should be drawn at random to establish cases for regression analysis. The remaining k samples are reserved for testing. The equation developed from the first n cases is used to make an estimate for each of the k samples in the test.

For each of the k test cases two observations can be made; the investment value is based on some income capitalization approach and the estimate is based on the multiple regression equation. The investment values are regressed on the one independent variable, the estimated price. The correlation coefficient that is derived is significant because it reveals how the original regression equation works with an independent sample of the cases. The standard error of this test will indicate the size of extreme errors likely to be obtained with successive use of the original regression equation.

The most important consideration in the application of multiple regression with regards to appraisals is the large degree of error that may be expected. What frequency of errors is tolerable for the specific appraisal applications? Is the risk of extreme errors greater with multiple regression than with conventional appraisals? Definite answers cannot be provided here because more research is needed.

7.5 Summary and Conclusions

Multiple regression analysis can be applied to appraisals provided that the farms are classified in homogeneous groups and that sample farms are appraised by the income capitalization approach. Multiple regression equations for homogeneous groups of farms could be estimated by highly qualified appraisers under the auspices of the SBS Brugg.

Appraisals based on MRA have been heavily discussed in the United States, but not in Switzerland. Different authors report on applications of MRA to estimate rural property. Both the advantages and the pitfalls of MRA have been covered in recent articles in professional literature.

Wendt concludes that the application of multiple regression techniques promises to have a major impact on appraisal theory and practice (11). In the current appraisal literature it is stated that MRA tends to be highly objective,

relatively simple, and requires no knowledge of capitalization methods, net income, or operating expenses. The major pitfalls with MRA are multicollinearity, standard errors, and interaction. Lessinger puts much emphasis upon the evaluation of regressions. An important consideration in the application of MRA is the large degree of error that may be expected. Error standards need to be set for different purposes. Overall, MRA seems to be a promising method. Studies need to be executed in order to evaluate the methods practicability.

8. SUMMARY AND CONCLUSIONS

8.1 Purpose of Study

The investment value of farms has been dropping in recent years. Increasing market values on one side and decreasing investment values on the other side have lead to widespread criticism and problems with enforcing the laws based on the investment value. The purpose of this study was to review farm appraisal procedures for the inter-family transfer of farm businesses and to formulate new appraisal procedures, if necessary. It was maintained that the purchase price for the farm business needs to be arrived at by an income capitalization approach. An on-farm heir can only make a living on the farm if the price he pays for the business is based on its earning capacity.

Earlier chapters have reviewed the farm transfer within families in general, the present regulations, and problems with the application of the present regulations. Then desired features, which new regulations should have, were derived. These criteria were used to evaluate a number of proposals. It remains for the final chapter to summarize the findings and conclusions and to comment upon further research.

8.2 Conclusions

8.2.1 The Present Method, The Factor Proportional distribution, and The Favored Proposal Compared

First, the investment values arrived at by applying the different appraisal methods will be compared. Then the different ways to compute net incomes and capitalization rates will be discussed. Finally, the three methods will be evaluated in light of the desired features which were outlined in chapter 4. Table two summarizes the comparison of the three methods.

The three methods are based on an income capitalization approach. All three methods apply the familiar capitalization formula $V = R/r$. It has been concluded that the assumption of constant capitalization rates and constant returns is warranted at the present time.

The investment values per hectare vary considerably depending on the farm types and the applied method. The present method leads to negative values for mountain-farms. The factor proportional distribution method leads to considerably higher investment values for both valley-farms and mountain-farms than the present method. The third method leads to investment values for valley-farms which are close to the results that were obtained by the present method, while the investment values for mountain-farms are positive but well below those obtained by the factor proportional distribution method.

Table 2 The Present Method, The Factor Proportional Distribution, and the Favored Proposal Compared ¹

	Present Method "First Method"	Factor Proportional Distribution "Second Method"	Favored Proposal "Third Method"
Investment Value per ha: Valley-Farms Mountain-Farms	Fr. 6,153 -Fr. 9,030	Fr. 10,200 Fr. 5,000	Fr. 6,058 Fr. 3,456
Capitalization Rate	4%	5 1/2%	6%
Depreciation or Upkeep and Remodeling costs	depreciation included	depreciation included	upkeep and remodeling costs included or excluded
Government Payments	parital income	reduced return to labor	sub-parital income for family labor
Return to Labor	past 15 to 25 years	past 5 to 10 years	last 5 to 10 years and anticipations
Data Base			
<u>DESIRED FEATURES:</u>			
Investment Value	***	**	**
Internal Consistency	***	*	**
Clarity	***	***	***
Workability	*	**	***
Family Understanding	*	**	**
Security for On-Farm Heir	***	*	**
Equitable Treatment	***	*	**
Comparable Farms	***	***	***
Future	*	*	***
External Consistency	*	**	***

¹ Good = ***, Fair = **, and Poor = *

The capitalization rate for the present method is 4%. At the time when this rate was set it corresponded with the interest rate for first mortgages. Interest rates for first mortgages have been approximately 5½% for the last ten years. The experts who proposed the factor proportional distribution method favor a capitalization rate of 5½%. When discussing the capitalization rate this author argued that the capitalization rate is the opportunity cost of money to whatever person or persons are the most likely buyers or owners of the subject property. The rate reflects that yield which could be obtained on a comparable investment in the next best alternative opportunity. Two methods for deriving capitalization rates were considered. The summation method was viewed as a logical procedure for the factors which influence capitalization rates. The percentage allowances for risk, for burden of management, and for lack of liquidity, however, remain a matter of judgement. The band of investment theory represents an attempt to obtain a weighted average of rates of return for the various interests in property ownership. The estimation of the equity return is a matter of judgement also. It was recommended that the SBS Brugg should determine appropriate capitalization rates for different farm types. A capitalization rate of 6% was assumed in the calculations for the favored proposal.

The present method and the factor proportional distribution method use depreciation when calculating net returns. This author argued to replace depreciation by upkeep and remodeling costs. Upkeep and remodeling costs are required to maintain all buildings and improvements in a proper state of repair and to remodel and rearrange existing buildings. Upkeep and remodeling costs may be estimated on the basis of past data and anticipated costs. Upkeep and remodeling costs are judged to be more realistic than depreciation if the income is expected to continue indefinitely. If the buildings and improvements are maintained and used for one purpose or another indefinitely, provisions for recapture need not be made.

Direct government payments are included in farm receipts in both the present method and the factor proportional distribution method. This author argued that direct government payments may or may not be included. One might argue that direct government payments are to support the farmer and not the co-heirs. It could also be argued that the purpose of these payments is irrelevant and that they have an impact on net incomes.

With the present method the return to operator and family labor is calculated based on an opportunity cost approach. The return to operator and family labor per hour is set equal to the wages of a skilled laborer in the area. With the

factor proportional distribution method the return to labor (operator labor, family labor, and hired labor) is reduced (as compared to the present method) when calculating the land rent as a residual. If income parity is not achieved the deficit is distributed among the factors of production; labor and capital. The favored proposal suggests the reduction of returns to operator and family labor to sub-parital levels. Returns to operator labor averaged around 95% of the incomes of qualified workers on the country side for valley-farms and around 65% for mountain-farms. The reduction of returns to operator and family labor can be justified by the fact that farmers did accept sub-parital returns in the past. It could also be argued that farmers have the option to sell the business at its market value at a later date, that the on-farm heir is typically willing to pay more than a farm's earnings value in order to gain the status of a land owner, to become a self-employed farm operator, to regain control of his original birthplace, or to live in the country.

With the current method, net income is based on average prices and patterns of production for the past fifteen to twenty-five years. The experts who proposed the factor proportional distribution method suggest a minimum of five years' data for the derivation of average prices. With the favored proposal it was stressed that the investment value must be defined as the present worth of the net returns

the business will produce in the future. It was proposed to use estimated or "normal" prices. An estimated price is the appraiser's best forecast of the price likely to prevail. A "normal" price is one that, for example, the SBS Brugg could select as being the one which will approximate the midpoint between the high and the low prices of the future.

The principle that the on-farm heir can purchase the business at an investment value holds for all three methods. However, this principle is somewhat weakened for the factor proportional distribution method and the favored proposal because the return to labor is reduced in both cases. The present method is judged to be internally consistent; however, it is not workable because it leads to very low or negative investment values. As a result, the second and third methods propose to reduce the return to labor. The factor proportional distribution method seems more arbitrary than the favored proposal. The return to labor includes the return to operator labor, family labor, and hired labor. However, hired labor is a cash expense. The investment values arrived at by using the second method are relatively high as compared to the first or third methods. The results of the third method are judged to be politically feasible. The reduction of the return to family and operator labor has been justified earlier in this chapter.

The three methods pass the test of clarity. They can be

understood and communicated from one person to another. The present method does not pass the test of workability since negative investment values often result. Negative or very low investment values are not acceptable to the co-heirs. The conflicts of interest among family members become too strong in view of high market values for land. The present method meets the criteria that children should be treated equitably and that comparable farm businesses should change hands at approximately the same prices. With the second method a good family understanding is somewhat enhanced; the comparably high investment values per hectare please the off-farm heirs but not the on-farm heir. The on-farm heir's security is in question because of the relatively high investment values which in turn affect a good family understanding. The favored proposal seems to work best. The family understanding is enhanced by higher investment values as compared to the present method. The situation for the young farm family appears to be good because of the reasonable prices paid for the business and the heirs are treated fairly.

The three methods insure that comparable farms change hands at comparable prices. The favored proposal's data is based on past data and data projections while the two other methods are based solely on past data.

In the judgement of this author the favored proposal is best. However, a few words of caution are in order. The

three methods are essentially the same; they are based on an income capitalization approach. The differences are found in the derivation of net incomes and capitalization rates. Any method based on an earnings approach involves many value judgements such as the level of the capitalization rate and the return to operator and family labor. The favored proposal is seen as an improved technique to do the impossible.

8.2.2 The Short Cuts Compared

Currently, gross income multipliers are used as a simple short cut for the present method. The commission of experts proposed to appraise individual farms by estimating the value of different elements (buildings, house, etc.) separately. The most important objection to this latter method is its interdependencies among the factors having an impact on the investment value. This author proposes, tentatively, to apply either multiple regression equations or gross income multipliers as short cuts. MRA or multipliers can be applied only if farms are classified into homogeneous groups and if sample farms are appraised by the income capitalization approach. MRA could be applied with any of the three methods. Further research needs to approve or disapprove the practicability of MRA and multipliers.

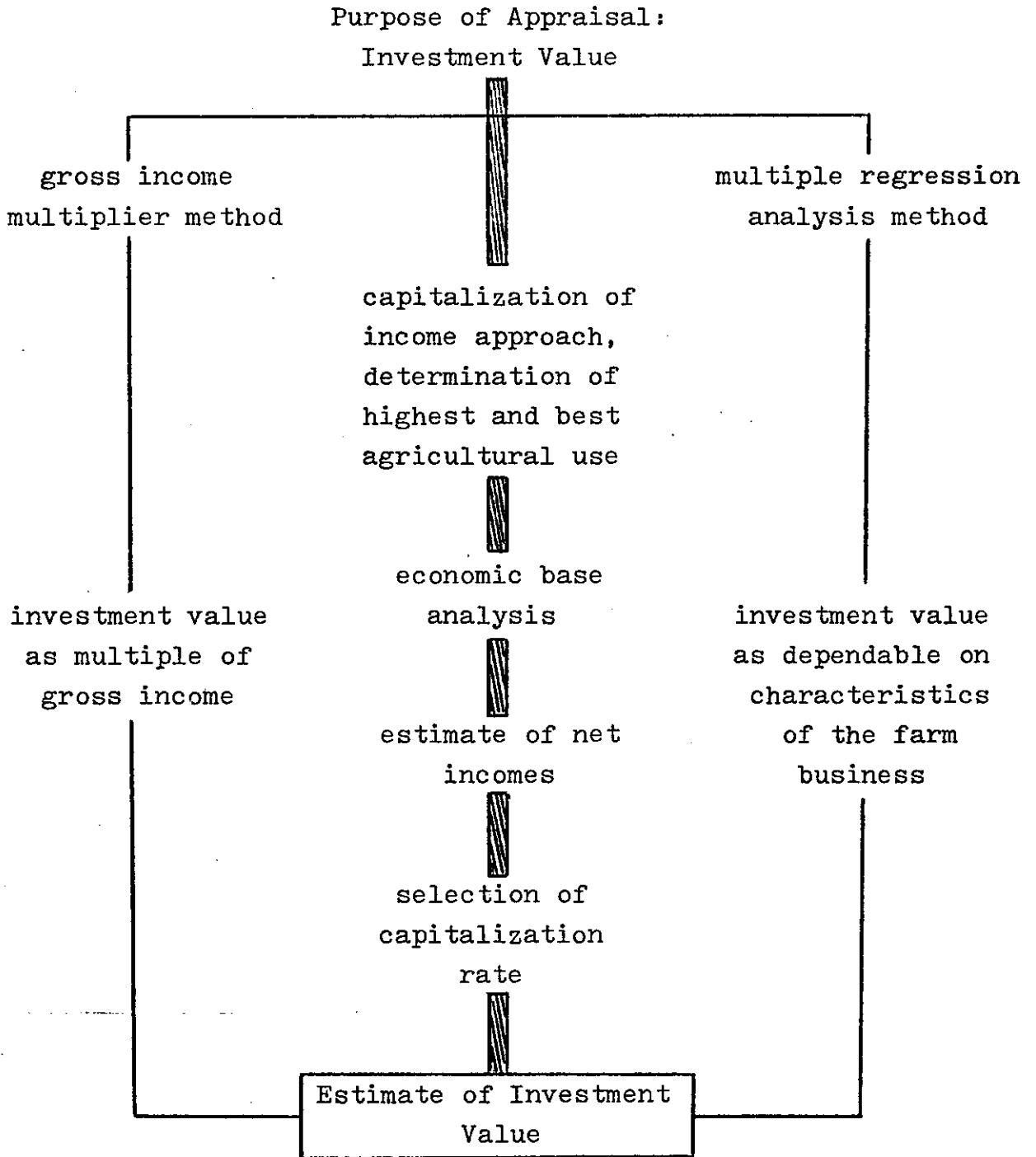
8.2.3 The Appraisal Process

The author proposes a tentative structuring of the appraisal process as set forth in Figure 5. The capitalization of income method is central in the determination of investment value. The gross multiplier method and the multiple regression analysis are assigned important potential roles; they are short cuts to the capitalization of income approach. The gross income multiplier method and the MRA method require that farms are classified in homogeneous groups and that sample farms are appraised using the capitalization of income approach. Based on these sample farms, multipliers or regression coefficients can be derived which are to be used as short-cuts in actual appraisals.

8.3 Suggestions for Additional Research

Throughout the paper, the need for additional research has been stated. It needs to be studied if appraisers should get a better education and seek recognition as professionals. This question is closely related to how the appraisal process is organized. If the mentioned short cuts are feasible the requirements for the practical appraiser will be low. If the practical appraiser needs to apply the income capitalization approach the requirements are high and the appraiser had better be well educated.

Fig. 5 The Appraisal Process



The MRA and the gross income multiplier method require the classification of farms in homogeneous groups, the appraisal of sample farms within each group by the income capitalization approach, and the correlation of the investment values of these farms with property characteristics in order to derive regression coefficients or gross income multipliers. Further research needs to explore whether relevant classifications can be found and if the short cuts meet error standards which need to be set up.

8.4 Concluding Remarks

There are weaknesses in this paper as a consequence of being developed in the United States rather than in Switzerland. There has been no opportunity to consult Swiss appraisers or the SBS Brugg. The proposals could not be tested by appraising actual farms, either. As a result case examples were based on bookkeeping results. However, the author got an overall view of the American appraisal literature and received guidance and suggestions from professors of agricultural economics who have valuable experience in appraisals. This latter input would not have been available in Switzerland.

Notes

Chapter 1

- 1) Revision des Schätzungsreglementes, Antrag des Eidgenössischen Justiz - und Polizeidepartementes an den Bundesrat, Bern, 1970.
- 2) Expertenkommission für die Revision des Eidgenössischen Schätzungsreglementes.
- 3) Article 602 - 640 Zivilgesetzbuch.

Chapter 2

- 1) This chapter draws heavily from: Ralph Hell, et. al., Michigan Farm Estate Planning, Michigan State University; Neil E. Harl, Farm Estate and Business Planning, Agribusiness Publications, 3rd ed., 1977; Johnson, J.E., Suggestions on Father and Son Farming Agreements, Agricultural Economics Bulletin No. 457 (revised), North Dakota, 1976.

Chapter 3

- 1) This chapter draws heavily from: My lecture notes, Economie rurale, from Professor J. Vallat, Zurich, 1976; Bericht der Expertenkommission für die Revision des Eidgen. Schätzungsreglementes an das Eidgen. Justiz - und Polizeidepartement, Brugg, 1978; J. Vallat, Der Ertragswert Gestern und Morgen, Zurich, 1975; Schweizerisches Zivilgesetzbuch und Obligationenrecht, Orell Fussli, Zurich, 1973.
- 2) Data from SBS Brugg, Bericht der ..., op. cit., pp. 18-19.
- 3) Article 29 Landwirtschaftsgesetz.
- 4) Paul F. Wendt, Real Estate Appraisal, University of Georgia Press, 1974, p. 158.
- 5) Babcock, Frederick M., The Valuation of Real Estate, New York: McGraw Hill, 1932, p. 180.
- 6) May, Arthur A., The Valuation of Residential Real Estate, 2nd ed., Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1953, pp.178-179.
- 7) Ratcliff, Richard U., Don't Underrate the Gross Income Multiplier, The Appraisal Journal, April 1971, p. 264.
- 8) Ratcliff, Richard U., op. cit., p. 266.
- 9) Ratcliff, Richard U., op. cit., p. 270. Ratcliff does not define what "acceptable" means.

Chapter 5

- 1) Bericht der Expertenkommission, op. cit., pp. 41-46.
- 2) Data from SBS Brugg.
- 3) Ratcliff, Richard U., A Restatement of Appraisal Theory, The Appraisal Journal, April 1964, p. 262.

Chapter 6

- 1) Other goals, such as the provision of quality food at reasonable prices and environmental protection, are stressed in literature, government publications, and agricultural regulations. The distribution of power (interest groups, parliament, administration) is such that the issue of parity incomes gets the most consideration.
- 2) Paul F. Wendt, Real Estate Appraisal, Review and Outlook, p. 45.
- 3) See for example: Jerome Dasso, Economic Base Analysis for the Appraiser, The Appraisal Journal, July 1969, p. 382; Weiner, Arthur M., Hoyt Homer, Bloom, George F., Real Estate, 6th ed., New York: Wiley, pp. 219-220.

- 4) AIREA, The Appraisal of Real Estate, 5th ed., Chicago 1967, p. 80.
- 5) The assumption of constant annual net incomes may not always be warranted. In this case the formula on page 49 applies. Babcock describes in The Valuation of Real Estate (p. 236) two alternative methods for estimating the future net income of a property: (1) the year-by-year forecast of future gross income and expenses, and (2) the use of what he refers to as the four income promises. Babcock emphasizes the danger of projecting historical figures into the future. However, he implies that the appraiser, through the skillful analysis of data and exercise of judgement, can establish an estimate of future net incomes which will fall within the limits of probable fluctuations. Babcock rationalizes the difficulties of predicting the long-term future by demonstrating that the earlier portions of the income stream account for the main part of a property value in the capitalization-of-income approach. Babcock's four income promises can be identified briefly as follows: premise 1 assumes that future incomes will occur in equal annual installments; premise 2 assumes a gradual decline in annual incomes for early years and a more rapid decline in later life; premise 3 assumes a more even decline over period than premise 2; and premise 4 assumes that future annual incomes will decline by equal annual differences (a straight line decline). A careful analysis may reveal that premises like described above fit reality better than the assumption of constant annual net incomes.
- 6) Frederick M. Babcock, The Valuation of Real Estate, p. 417.
- 7) Richard U. Ratcliff, Net Income Can't be Split, The Appraisal Journal, April 1950, p. 171.
- 8) The formula for finding the farm's current equity can also be derived as follows: Assume the future incomes R as constant. Assume that the farm is held for n periods and is then resold at its original price. Then V equals:

$$V = \frac{R}{1+r} + \dots + \frac{R}{(1+r)^n} + \frac{V}{(1+r)^n} \quad (1)$$

It can be shown that equation (1) reduces to the familiar capitalization formulas

$$V = R/r.$$

See for example: Lindon J. Robison, Income, Inflation, and Land Values: Implications for Lenders and Prospective Land Buyers, Michigan State University, 1979, p. 3.

- 9) The words "typical" and "prospective" are perhaps overworked here. However, an appraiser cannot inject management into either his thinking or his analysis. It is also stressed that farms are appraised for the future.
- 10) However, income capitalization is not always straight or simple. In some instances, a given property may include a unique asset which will eventually depreciate or wear out over time. The income stream of such an asset will, at some future point in time, cease to exist. In this case income should not be capitalized into perpetuity. The appraisal value must reflect a flow of income that will dry up or be discontinued. The asset may or may not have value some time in the future. The investor in this situation not only wants to obtain a return on his capital but also a return of his capital; i.e., he wants to recapture his capital as well.
- 11) Frederick M. Babcock, The Valuation of Real Estate, pp. 188, 427, 438, 432.
- 12) AIREA, The Appraisal of Real Estate, 7th ed., 1978, p. 373.
- 13) Alfred A. Ring, The Valuation of Real Estate, 2nd ed., Englewood Cliffs, New Jersey: Prentice Hall, 1970, p. 282.
- 14) AIREA, The Appraisal of Real Estate, 7th ed., p. 368.
- 15) AIREA, op. cit., p. 369.
- 16) AIREA, op. cit., p. 369.

- 17) Medical opinion is frequently contradictory in court cases. Economists disagree significantly doing work similar to what the appraiser does -- projecting future economic activity. Neither professionalism nor competence of these individuals is diminished because of diverse interpretation and opinion.

Chapter 7

- 1) Raoul J. Freeman, Real Estate Assessment and Electronic Computers, The Appraisal Journal, April 1959, pp. 181-184.
- 2) Britsch W., Einzelbetriebliches Wachstum in der Landwirtschaft, Eine empirische Analyse der wachstumsbestimmenden Faktoren in 141 niedersächsischen Betrieben von 1950-1960, Diss. Agr. Göttingen, 1972.
- 3) Schott, Ried L., White Fred C., Multiple Regression Analysis of Farmland Values by Land Classes, The Appraisal Journal, July 1977, pp. 427-434.
- 4) William M. Shenkel, Property Tax Assessments by Computer: Agricultural Land Valuation, Assessors Journal, April 1974, pp. 17-40.
- 5) R.J. Brown, On the Selection of the Best Predictive Model in Multiple Regression Analysis, The Appraisal Journal, October 1974, pp. 572-578.
- 6) The following references give some indication of the magnitude of this discussion, at least as it has appeared in the major appraisal journals. Several articles have described some of the pitfalls that may ensue the unwary uses of regression appraisal models: William M. Shenkel, Cash Flow and Multiple Regression Techniques: Comparative Analysis of Apartment Properties, Journal of Property Management, November-December 1969, pp. 264-276; Edward F. Renshaw, Scientific Appraisal, National Tax Journal, December 1965; Fred E. Case, New Decision Tools for the Appraiser, The Appraisal Journal, January 1967, pp. 21-27; Jack Lessinger, Toward a New Method and Theory of Appraisal, The Real Estate Appraiser, March 1968; James E. Reinmuth, The Use of Multivariate Statistical Methods in Appraisal Analysis, Assessors Journal, September 1976, pp. 137-152; George W. Gipe, Analysis of Residuals to Improve Multiple Regression Equations, Assessors Journal, April 1974, pp. 9-16; T. Gregory Maston, Factor Analysis, Multicollinearity and Regression Appraisal Models, The Appraisal Journal, October 1977, pp. 578-588.
- 7) George W. Gau and Daniel B. Kohlhepp, A Review of Quantitative Techniques Applicable to Multicollinear Relationships in Real Estate and Urban Economics Research, American Real Estate and Urban Economics Association, September 16, 1976.
- 8) Stenehjem, A Scientific Approach to the Mass Appraisal of Residential Property Values, p. 29.
- 9) Lessinger, Jack, A Final Word on Multiple Regression and Appraisal, The Appraisal Journal, July 1972, pp. 449-458.
- 10) _____, p. 453.
- 11) Paul F. Wendt, Recent Developments in Appraisal Theory, The Appraisal Journal, October 1969, p. 490.

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