

ESTIMATING A WEALTH ACCOUNT FOR AGRICULTURAL LAND IN QUEBEC: INCORPORATING NATURAL CAPITAL INTO A SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTS

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Introduction

The Canadian System of National Accounts provides information about the economic activity over a period of time. Although these accounts provide useful information for understanding and projecting traditional economic activity, they do not provide an estimate of our natural capital.

Hedonic price model estimates of land attributes

Implicitly pricing the attributes of agricultural land provides a more flexible means of estimating the value of the land resource for the Satellite Account. Table 1 describes the variables included in the hedonic model.

The next step is to use the implicit prices with information on the physical land attributes of the agricultural land resources in Quebec. The wealth account provides an estimate of the natural capital associated with the inventory of agricultural land. The values estimated through this approach increases the compatibility of the wealth account with the current System of National Accounts.

Objective

The objective is to develop a hedonic pricing model to create a wealth account for agricultural land in Quebec. Individual land transactions were combined with information on the physical attributes of the land; using geographic information system (GIS) technology, to estimate the implicit prices of agricultural land attributes in Quebec.

Method

Geographic Information System

Advances in georeferencing technology provides access to data management that were previously not available due to the size and complexity of the information. The information is displayed in "layers". Each layer contains one type of information and overlaying the layers allows the integration of the information. Figure 1 illustrates a simple application of integrating natural resources into the system of national accounts.

Type of information	Source	Definition of units				
Price per hectare	Financière Agricole du Québec	Dollar per hectare updated with farm input index				
Size of land traded	Financière Agricole du Québec	Expressed in Hectare				
Date of transaction	Financière Agricole du Québec	December 31, 2010				
Type of production	Financière Agricole du Québec	Registered crop designated by field.				
Regional Population Density	Statistique Canada	Population density designated at the Census Subdivision level				
Land potential	Canadian Land inventory	A qualitative scale is attributed from 1 to 8 (where 1 is excellent and 8 cannot be used for agricultural purpose) O for organic soil.				
Agricultural activity density	Statistique Canada	Census Subdivision level				
Farm input index	Statistique Canada	Index available every quarter from 2000 to 2010.				
Weather conditions	Canadian Ecodistrict Climate Normals	Number of effective growing day				







We isolate the land transacted in a specific region from its cadastral map We include Y We include information layer about land use (forest in green and water ways in blue) We include information layer about about about agricultural potential

Fig.1 An example of integrating layers for agricultural land resources in Quebec.

Land in the Canadian System of National Account

Satellite accounts were created to capture potential activities that are beyond the scope of traditional economic activities.

The land account is composed of five elements; the physical foundation, the land cover, the land use, the land potential, and the land value (Statistics Canada, 2006). Figure 2 illustrates their interactions.

Table 1 Variables included in the hedonic pricing model.

Results

Table 2 below provides land value estimates based on land classes.

Land Class	1	2	3	4	5	6	7	8	Total value of land
Estimated Value (million of dollars)	82,9	3597,4	3933,7	6565,5	2697,6	2,4	21503 <i>,</i> 0	789,1	39171,6

Table 2. Estimated Land Value in Quebec.

Conclusion

A hedonic pricing model can be used to implicitly value the attributes of agricultural lands that can estimate a wealth account. Using this information and changes in the physical inventory of agricultural lands will provide an estimate of the changes in natural capital. This information can be used to direct agricultural policy to ensure the future productivity of agriculture.

Literature cited

Statistics Canada, "Concept, Sources and Method of the Canadian System of Environmental and Resource Account". Catalogue no.16-505-GIE, 157 p.
McAuley, J., 1996, "Agricultural Land Valuation in Canada," Environmental Perspectives 3: Studies and Statistics, Statistics Canada, Catalogue No. 11-528E-XPE, No.3, Ottawa.



Fig.2 The interaction between the five elements of the land account.

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For further information

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