Preserving land in agriculture in Alberta : What is the Values Proposition?

Brent Swallow

Professor of Agricultural Economics

University of Alberta

With colleagues & MSc students:

Angela Bentley, Yangzhe Cao, Darren Epperson, Scott Jeffrey, Feng Qiu, Bob Summers, Haoluan Wang, Qi Wang

UNIVERSITY OF ALBERTA
Alberta Land Institute

Land Use 2018, May 30-31, Westin Edmonton

Results from land use change analysis (see summary in ALI report from November 2017):

- Conversion from agricultural to developed uses (urban, industrial) is highest around Edmonton & Calgary and corridor between.
- High conversion in the 1980s, 1990s and 2000s.
- Conversion = f (pop growth (+), road density (+), fragmentation (+), soil quality (-)).
- Fragmentation by country residential is a precursor to conversion.
- Conversion in one municipality results in conversion in neighbours.

Proposition: farmland conversion is the aggregate consequence of many decisions by individuals and all levels of government

- Decision making ⇔ balancing values
- Can assess values through attitudes and decisions of individuals & groups
- Evidence on land values in Alberta
- What municipal decision makers should know as they balance values (day in and day out)

Value of land to society:

- Air quality regulation
- Water quality regulation
- Flood mitigation
- Pollination services
- Habitat conservation
- Scenic beauty
- Cultural and heritage values

Mostly non-market values

Values of land to individuals as:

- Payers of property tax
- Buyers of consumer products
- Buyers or renters of homes
- Earners of income
- Members of society

Values of land to individuals as:

- Payers of property tax
- Buyers of consumer products
- Buyers or renters of homes
- Earners of income
- Members of society

Values of land to individuals as:

- Taxpayers – **balancing great public services with minimizing own property taxes**

Values of land to individuals as:

- Taxpayers – **balancing great public services with minimizing own property taxes**

- Consumers –**balancing localness of food (authenticity, safety and freshness) with cost & variety**

Values of land to individuals as:

- Taxpayers – balancing great public services with minimizing own property taxes

- Consumers balancing localness of food (authenticity, safety and freshness) with cost & variety

- Home dwellers -- balancing attributes of house and lot, privacy, safety of neighbourhood, access to services, open space, discretion over use

Values of land to individuals as:

- Taxpayers – balancing great public services with minimizing own property taxes

- Consumers –balancing localness of food (authenticity, safety and freshness) with cost & variety

- Home dwellers -- balancing attributes of house and lot, privacy, safety of neighbourhood, access to services, open space, discretion over use

- Income earners – access to well-paying and fulfilling work, quality of farmland, farm equipment, access to input & output markets

Values of land to individuals as:

- Taxpayers – balancing great public services with minimizing property taxes

- Consumers –balancing localness of food (authenticity, safety and freshness) with cost & variety

- Home dwellers -- balancing attributes of house and lot, privacy, safety of neighbourhood, access to services, open space, discretion to use

- Income earners – access to well-paying and fulfilling work, quality of farmland, farm equipment, access to input & output markets

- Members of society – balancing own consumption with fairness & justice; legacy of cultural and environmental heritage; pleasant feelings from social experiences

Assessing values:

- Legislation and debate reflecting collective values
- Structured conversations with individuals and groups – Bob Summers & Darren Epperson **(Concurrent Session 3B)**
- Deductions of farm attributes from farmland purchase decisions (Angela Bentley, Scott Jeffrey, Feng Qiu)
- Deductions of general attitudes from surveys and realistic choice experiments (Haoluan Wang, Brent Swallow)
- Deductions of living space values from rural residential purchase decisions (Qi Wang, Brent Swallow)
- Deductions on the value of open space and policy from land purchase decisions in natural experiments (Yangzhe Cao, Brent Swallow, Feng Qiu) **(student poster)**

Survey and realistic choice experiment (2015):

Wang and Swallow (2016) survey of 320 residents of the Alberta Capital Region focused on public values:

- Most said the pace of urban development was too rapid
- 80% would be willing to pay to maintain land in agriculture
- Willing to pay for conservation of vegetable land > rolling grasslands > cropland = hayland
- Most concerned about conservation of farmland for: food for local market > air purification > water purification > scenic beauty > production of food for global market
- More concerned about seeing farmland from highways than conserving farmland of highest ecological function

Individual values from rural property purchase decisions:

Bentley, Jeffrey, Qiu hedonic price analysis of Farm Credit Canada data across Alberta.

Price / acre = f (ag infrastructure (dairy, irrigation, greenhouse),
net farm income
high soil quality
quality of house,
proximity to Edmonton or Calgary
proximity to highway 2)

ag

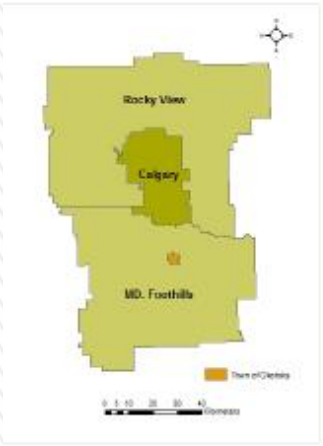
res

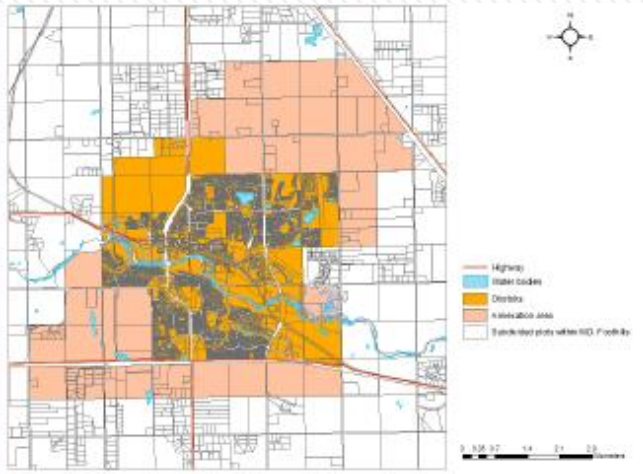
Values from urban property purchase decisions:

Cao, Swallow, Qiu analysis of Brookfield data on single family dwellings for the Okotoks area **(see student poster)**

Okotoks urban development policy as a natural experiment of the impacts of more restrained and less restrained growth policy:

1998: Finite growth policy to protect urban open space and keep pop < 30,000
2012: Continuous growth policy to allow urban development
2017: Annexation of 4900 acres from M.D. Foothills





Question: Why would people worry about Okotoks growth strategy in housing decisions?

Because they value living close to urban services and “open space”, especially if they expect it to remain as open space.

Methods:

- Two variants of hedonic price model (Pi =f (Xi1…Xin)
- Accounts for amount of open space (forest, pasture, cropland, grassland, park) with 200 m of property
- Endogenous switching regression models prices before and after policy change, accounting for the owner's decision of whether or not to sell under the growth policy.

Data:

- Brookfield RPS data (2010-2017) on single-family dwellings
- Census neighbourhood data
- AAC Land use data

Results:

- Willing to pay (WTP) for open space within 200 m:

  WTP forest > WTP pasture > WTP grassland

- WTP for all types of open space higher with finite growth policy than with continuous growth policy

- Can calculate the property tax implications of lower WTP for each property sold, spillovers to neighbouring properties

Implications for municipal decision makers:

- Albertans value ag land for many reasons – variable across individuals and settings
- Albertans place high value access to jobs and services (but not too close)
- Re-designation for development reduces open space values, may result in lower cost of services (short term?)
- Re-designation for development is a partial privatization of open space values
- Land use change and property values have spatial spillover effects, benefit from joint plans by municipalities

Next steps:

- Assess impacts of other development policy "natural experiments" (suggestions?)
- Survey of public values toward farmland conservation and development across Alberta
- Combine quantitative and qualitative approaches

Max Bell Foundation

UNIVERSITY OF ALBERTA
Alberta Land Institute

ALBERTA REAL ESTATE FOUNDATION

CALGARY REGIONAL PARTNERSHIP
Thinking regionally... acting locally

capital region board

fcc

Brookfield RPS