

**Insights from transatlantic comparative studies on
land use and political driving forces:
the example of Massachusetts, USA - Switzerland**

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Motivation

- Understanding **role of political driving** forces in shaping the land
- Approach: Comparison **Massachusetts (MA) – Switzerland (CH)**

Research questions

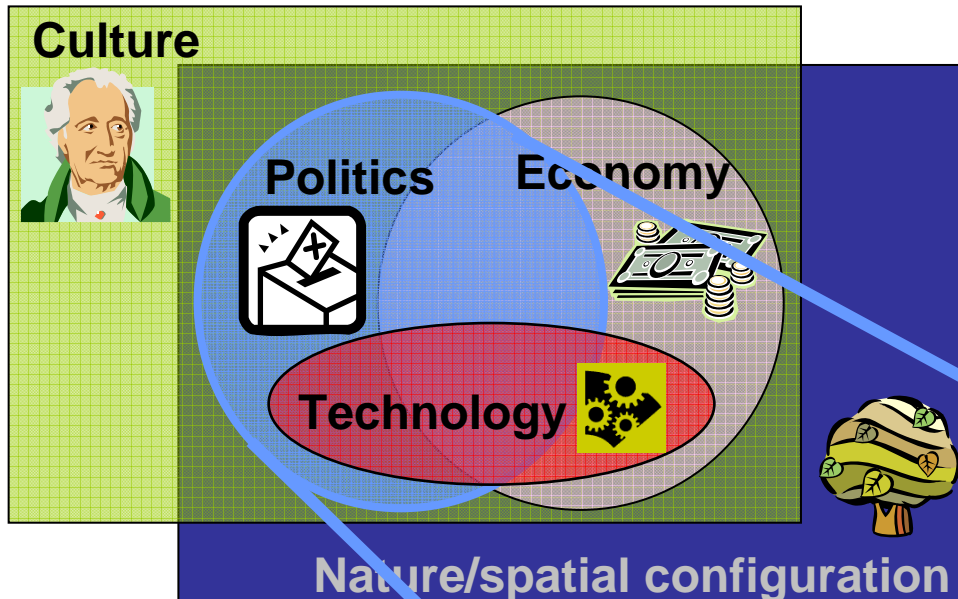
- Do **political driving forces explain** the **differences in land use change** between **MA and CH**?
 - How did **land use change from 1850-2000** in Switzerland and Massachusetts?
 - Which **political driving** forces affected these land use changes?

Outline

- Analytical framework
- Study area
- Method
- Results
 - Land use change: extent and spatial patterns
 - Political driving forces
 - Synthesis
- Conclusions

Analytical Framework

Types of driving forces



Levels of driving forces



Political driving forces:

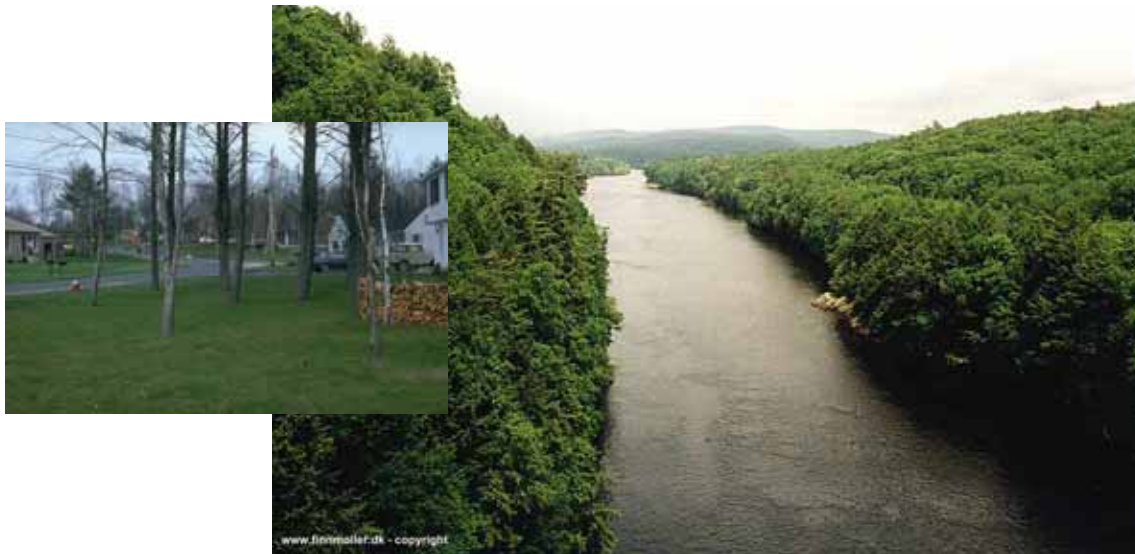
Policies, plans, rules, and regulations on land use, within the governmental context

Land use planning and policy

- **A branch of public policy**
 - Orders and regulates the use of land in an efficient way
 - For the benefit of the wider population and the environment
- **Directly affects land uses**
 - Instruments are e.g. zoning, protection status, and laws
- **Differs from nation to nation**
 - Is shaped by the governmental structure and economic system
- **Nominal and functional**
 - Nominal: Explicitly formulated to regulate land use
 - Functional: Regulations to achieve desired development and spatial structure, e.g. some agricultural policies

Study area: MA

Massachusetts (MA)



Study area: CH

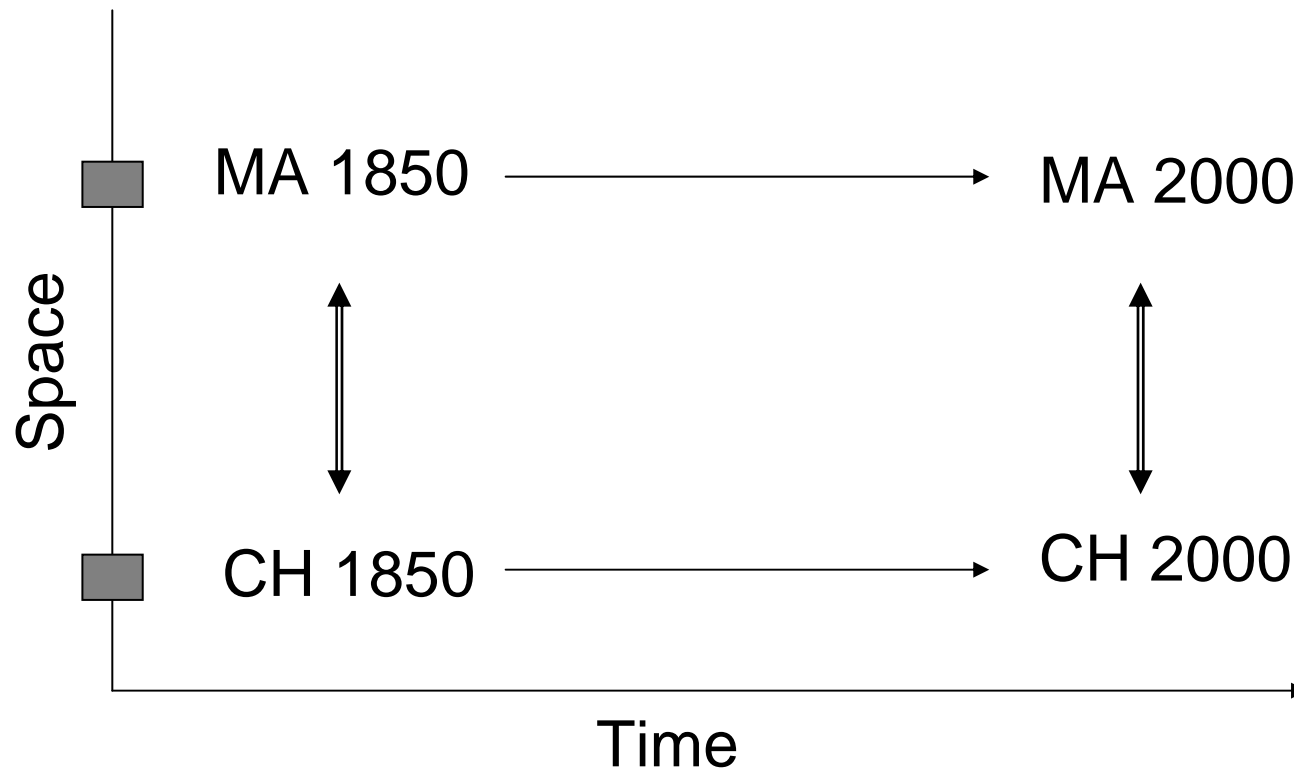
Switzerland (CH)



Key numbers: MA and CH

	MA	CH
Population center	Boston	Zurich
Average yearly temperature (°C)	10.9	9.2
Precipitation (mm)	1092	1128
Area (km ²)	20'306	41'285
Population (2004)	6'416'500	7'415'100
Income (per capita SFr. 2002)	51'800	49'012
Number of cities and towns	351	2815
	State	Nation

Method: double comparative study

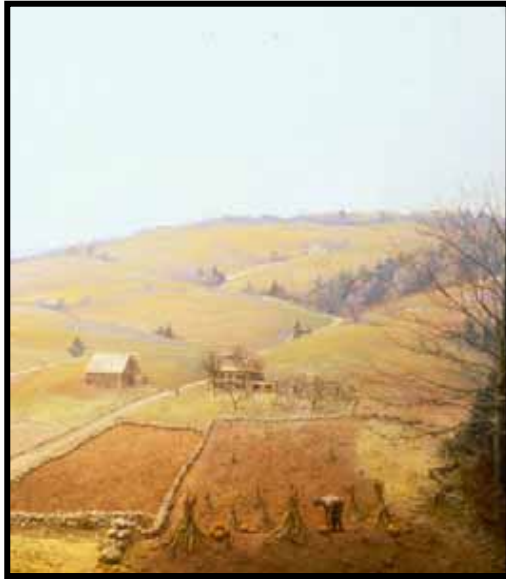


After Bürgi&Russel 2001

- **What happened** (patterns of land use)
- **Why did it happen** (land use planning and policies)

Double comparative study: in pictures

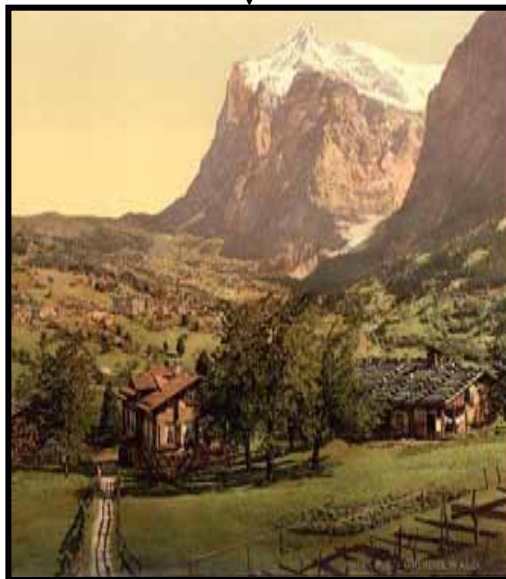
MA 1850



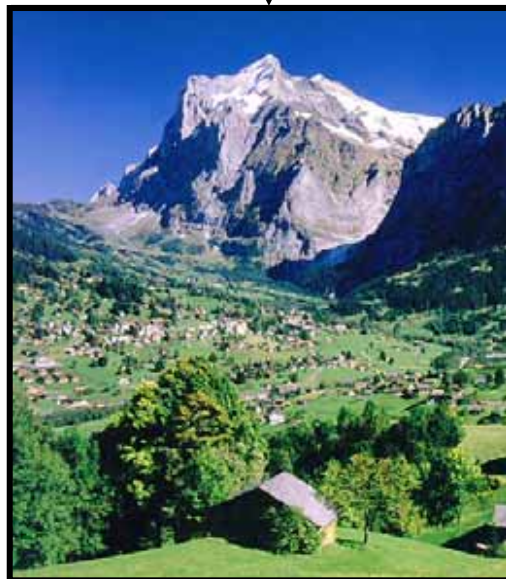
MA 2000



CH 1850

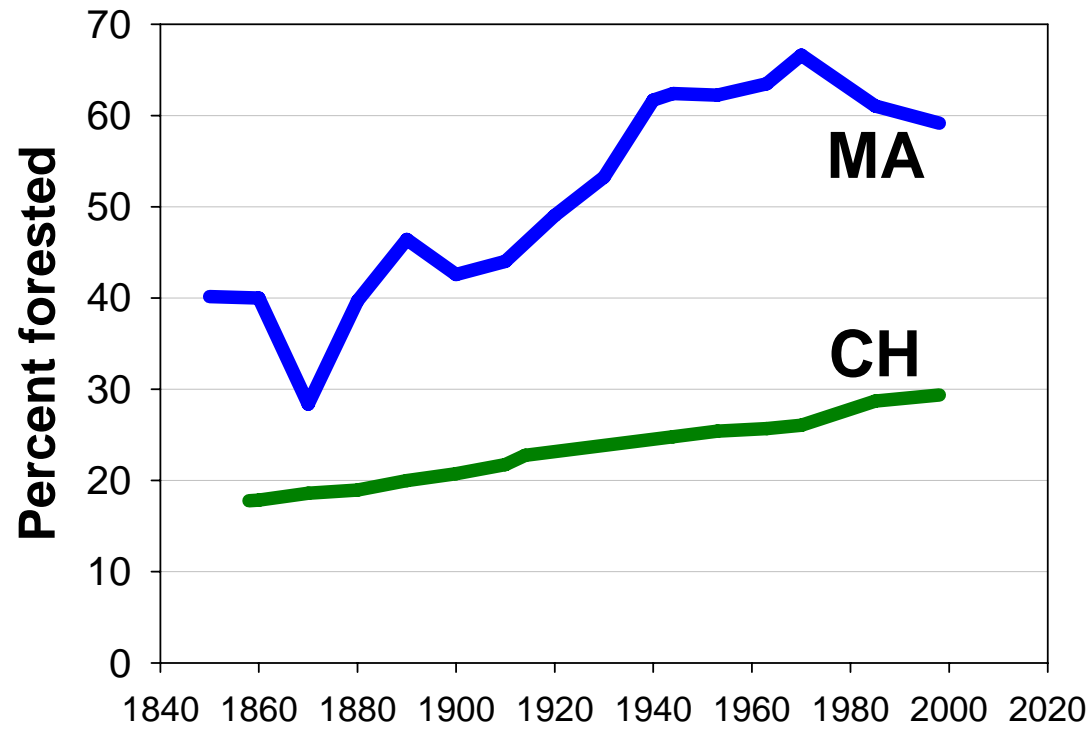


CH 2000



Land use changes in MA and CH

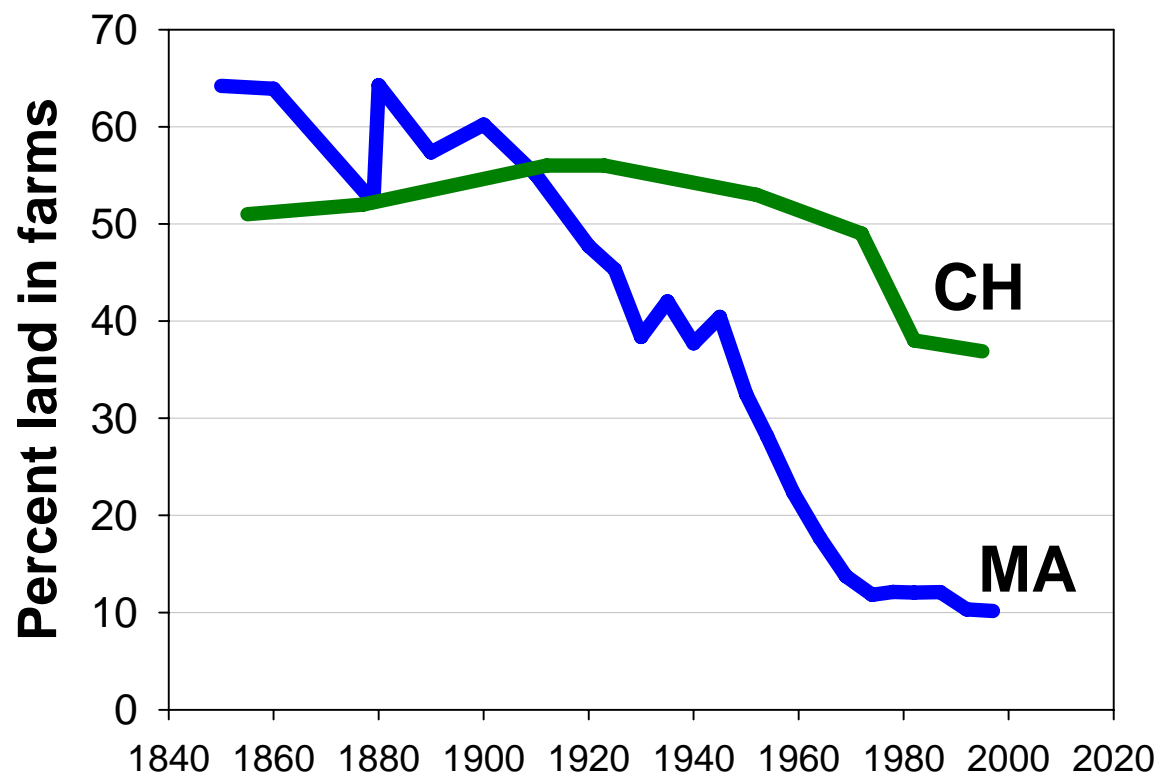
Forest



MA: HF 2005

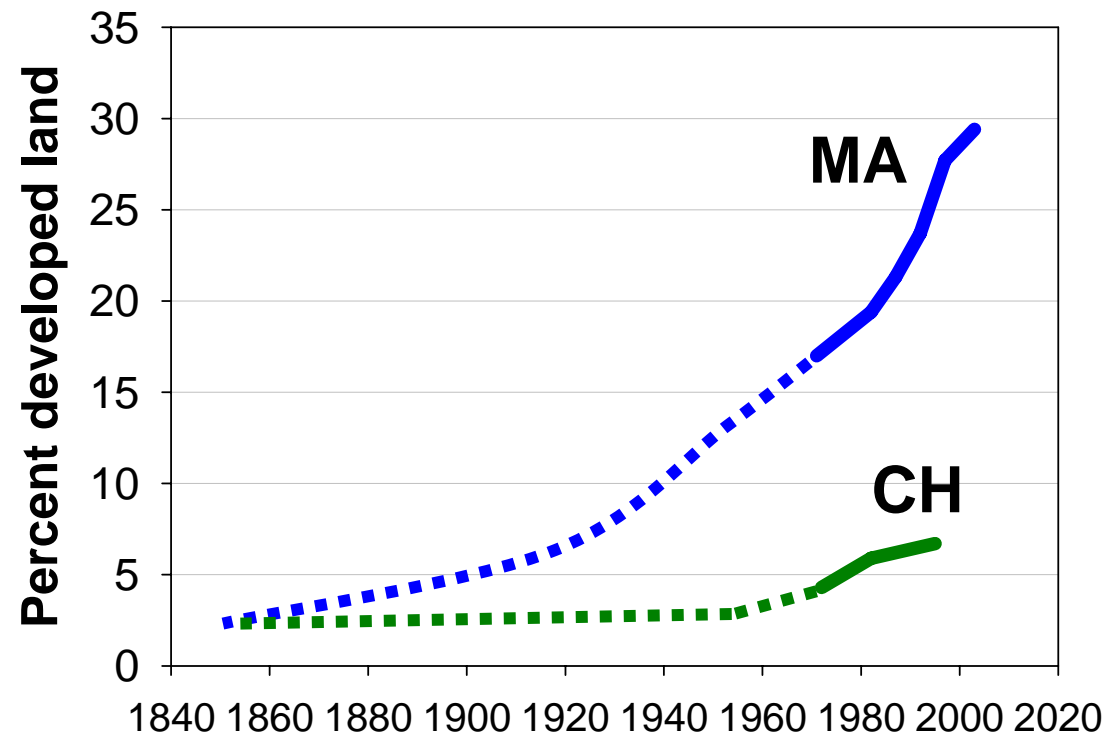
CH: Brändli 2000

Land use changes in MA and CH Farmland



Sources: MA: Historical statistics of the United States; CH: BFS, Historische Statistik der Schweiz

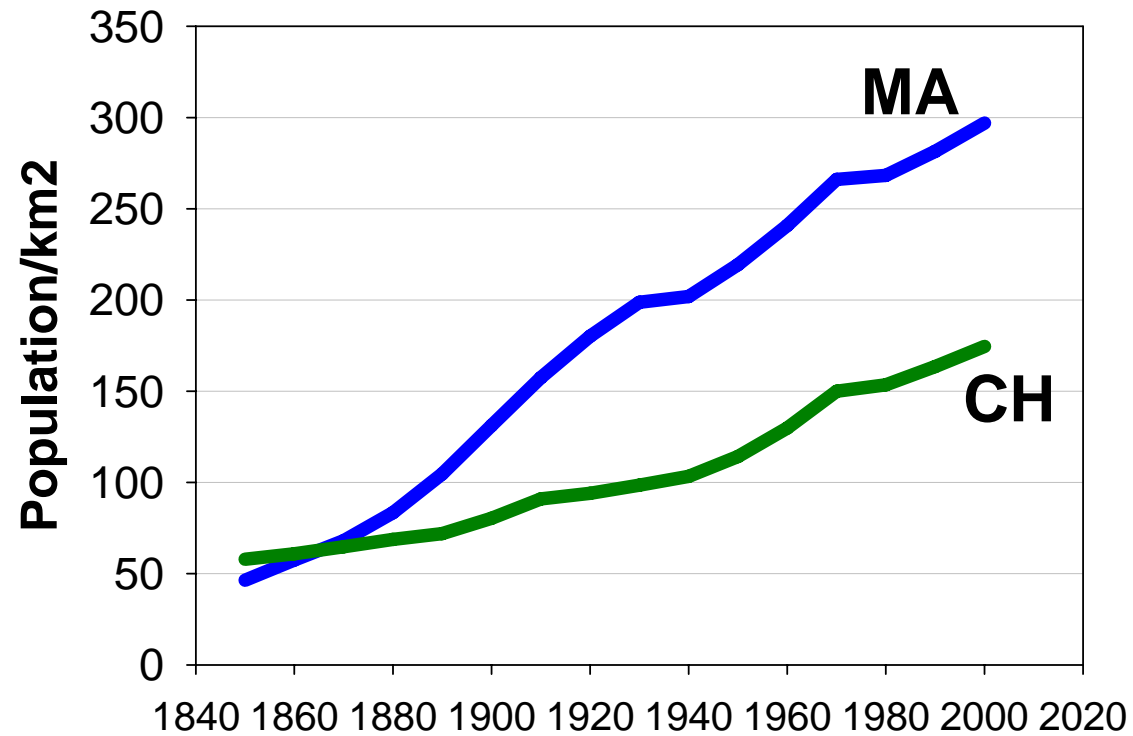
Land use changes in MA and CH Developed



MA: NRCS; CH:BFS

Land use changes in MA and CH

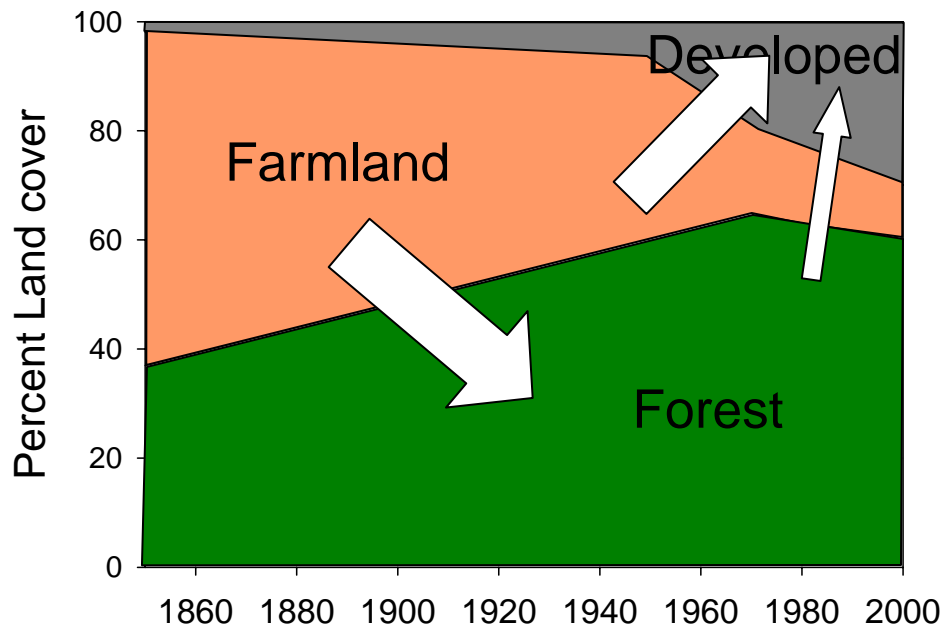
Population density



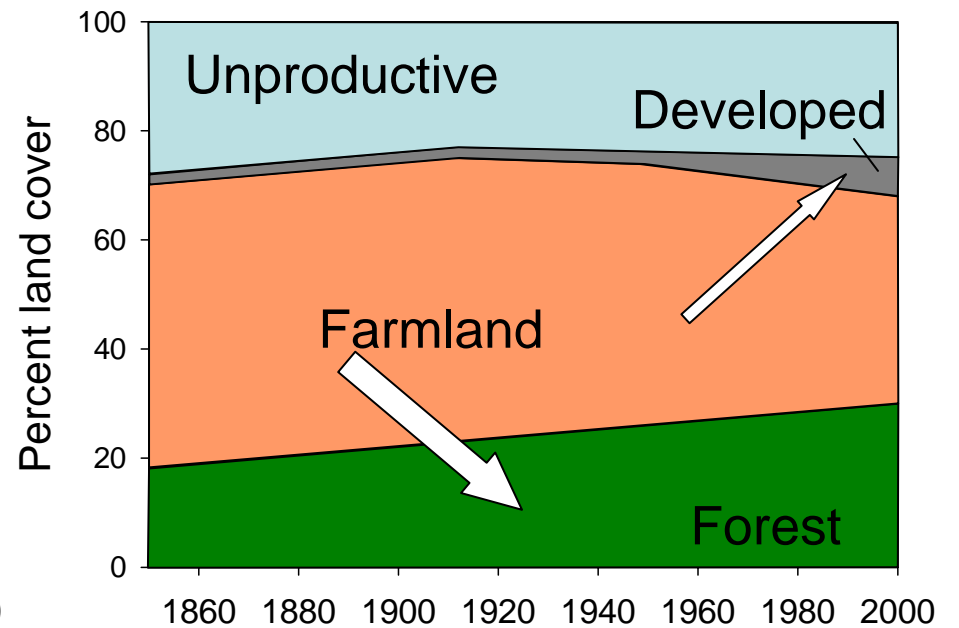
MA: <http://www.npg.org/states/ma.htm>; CH: BFS

Conceptual diagram of land use change

MA

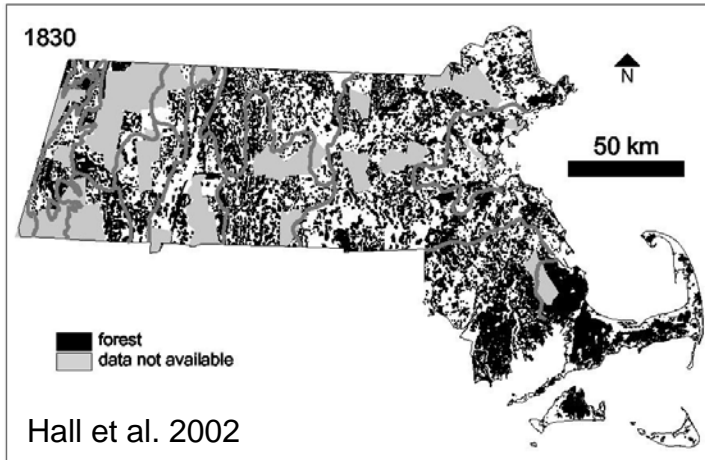


CH

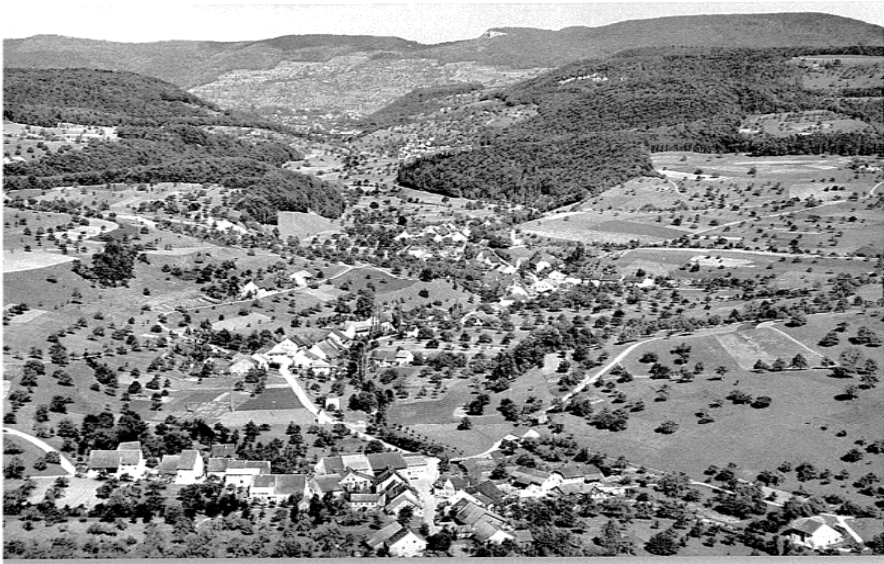


Spatial patterns MA

Forest distribution patterns



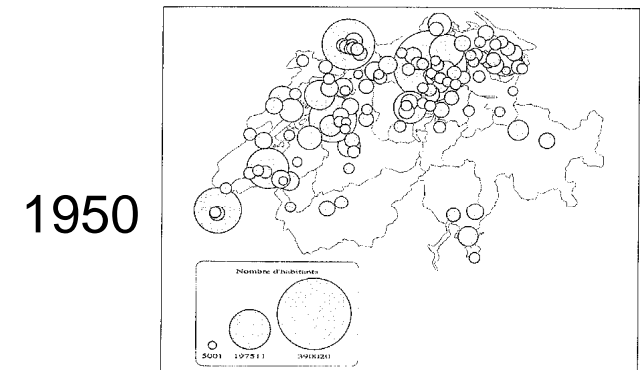
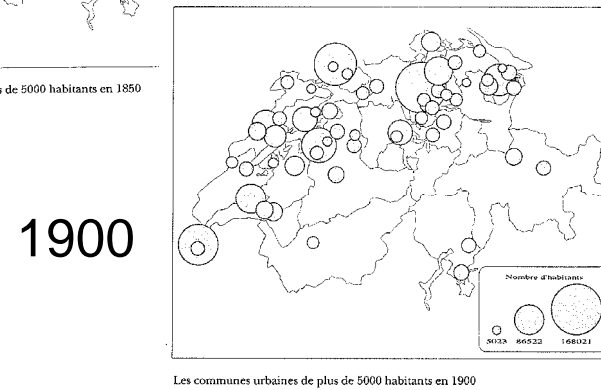
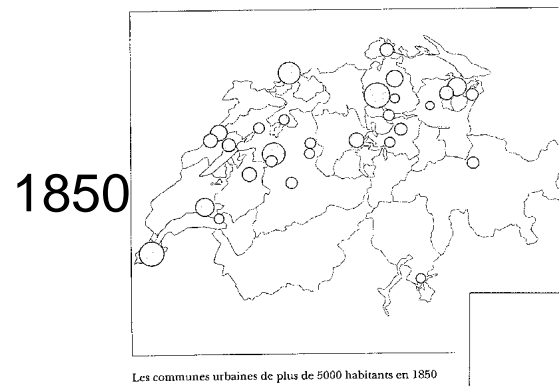
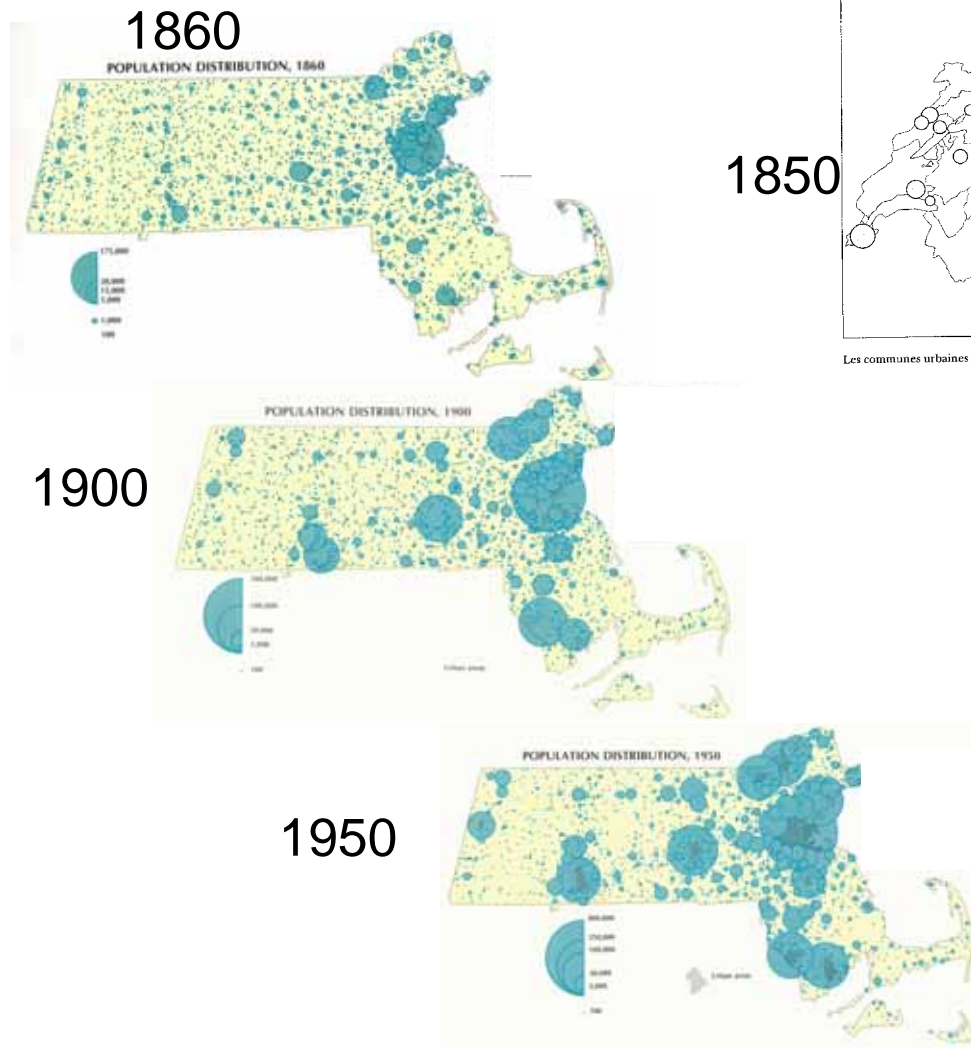
Spatial patterns CH



Example: Diegertal 1955 and 1995

Source: Tanner, 2001

Urban structure: MA and CH



Source: Wilkie and Tager 1991, Walter 1995

Policies: MA

1850

1900

1950

2000

Homestead act

Agricultural research and extension service

State forestry programs

Conservation

Regional planning

Zoning

Smart growth

Farmland
conservation

Policies affecting forests in MA

Policy	Goal	Effect on land use
MA state forestry programs (since 1900)	Create state forest reserve Regulate and promote forest management of private land	1133 km ² preserved and publicly owned state forests and parks (9% of forest area)
Conservation efforts	Diverse conservation goals	Localized effects

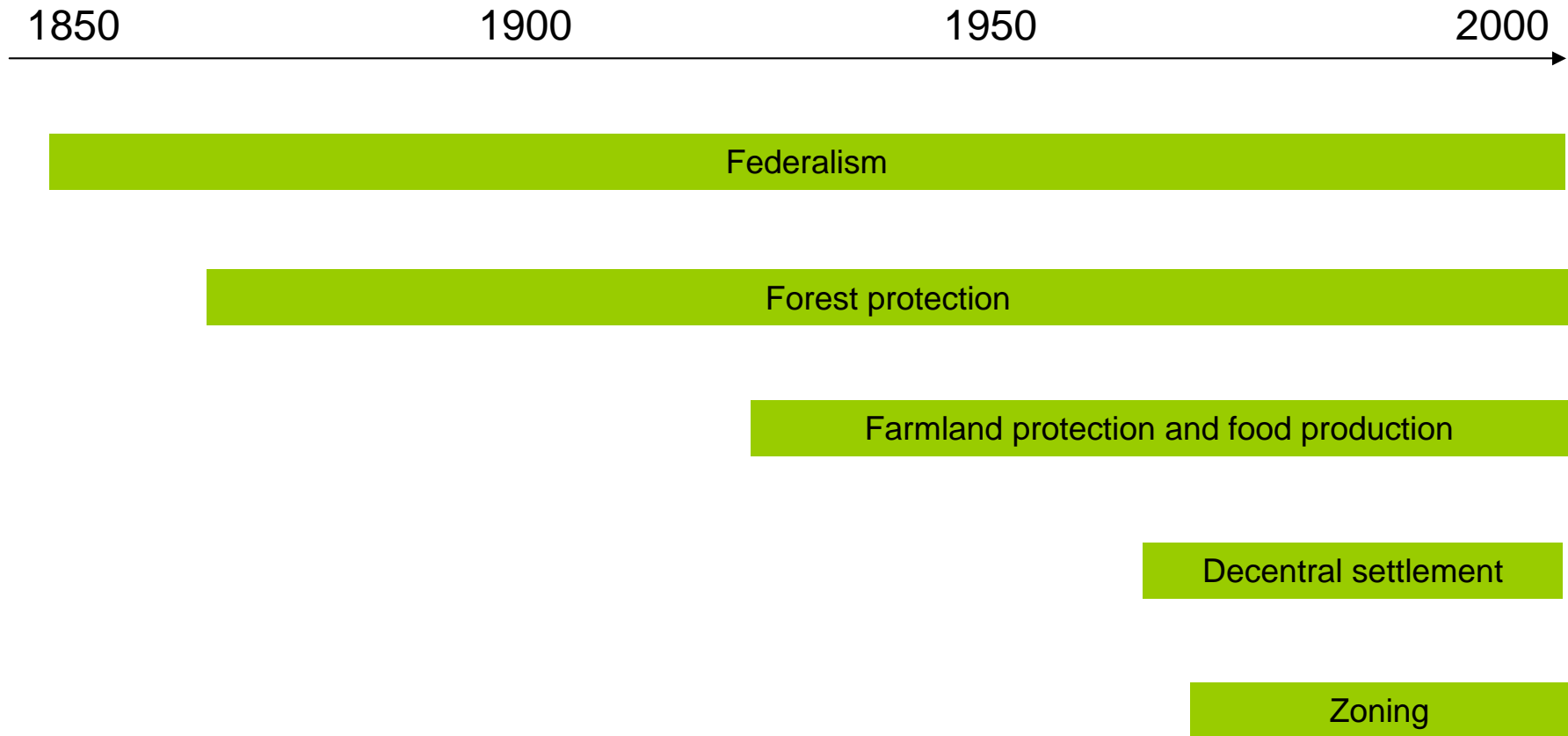
Policies affecting farmland in MA

Policy	Goal	Effect on land use
Land policy, Homestead Act of 1862	Farmers can acquire land in the West	Relieves pressure to farm MA land
Policies to promote research and farm extension work, e.g. Morrill Act of 1862 Smith-Lever Act of 1914	Modernize agricultural production and productivity	Focus on perishable goods and cranberries
Farm programs since 1920s	To raise farm incomes and commodity prices	Not very relevant
Farmland protection initiatives (local, since 70s)	To keep family farms and prevent farmland from development	Only localized effect

Policies affecting developed land in MA

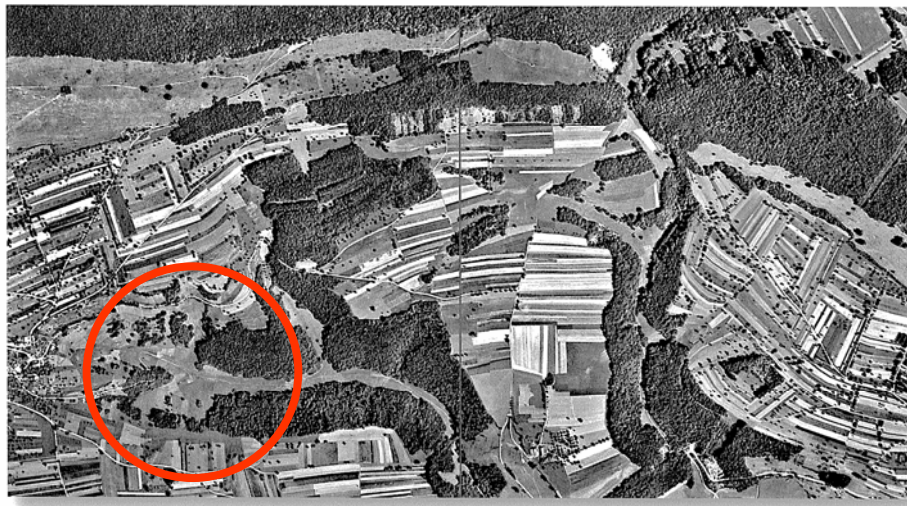
Policy	Goal	Effect on land use
Regional planning	Comprehensive regional planning	Effects marginal
Zoning (since 1920s)	Assigning certain uses to certain districts (areas), prevention of nuisances	Effect on growth of developed land marginal
Smart growth policies (since 1960s)	To refocus a share of regional growth to central cities and inner suburbs (through the use of public and private subsidies)	Localized effects

Policies shaping these land use changes: CH



Policies affecting forests in CH

Policy	Goal	Effect on land use
Forest Act 1874 and 1902	Reforestation and protection of the forest extent	Preservation of the woodland patches Slow increase in forested area



Policies affecting farmland in CH

Policy	Goal	Effect on land use
Bundesbeschluss zur Förderung der Landwirtschaft 1884 Landwirtschaftsgesetz 1893	Research and education, soil improvement and drainage	Change from cereal to dairy, increase in productivity and tillable area
Farm programs since 1920s	To raise farm incomes	Prevents structural change, keeps marginal land in production
Landwirtschaftsgesetz 1951	Family farms, decentralized settlement of Switzerland	Conserving use patterns

Policies affecting developed land in CH

Policy	Goal	Effect on land use
Federalism	Local governance, if appropriate	Persistence of small scale settlement pattern
Local zoning initiatives (since 1950s)	Infrastructure planning	Concentration of development near and in existing centers (localized effect)
National spatial planning law RPG (1979)	Economic use of the land through separation of building and non-building areas (farmland)	Restricting sprawl, effect differs regionally

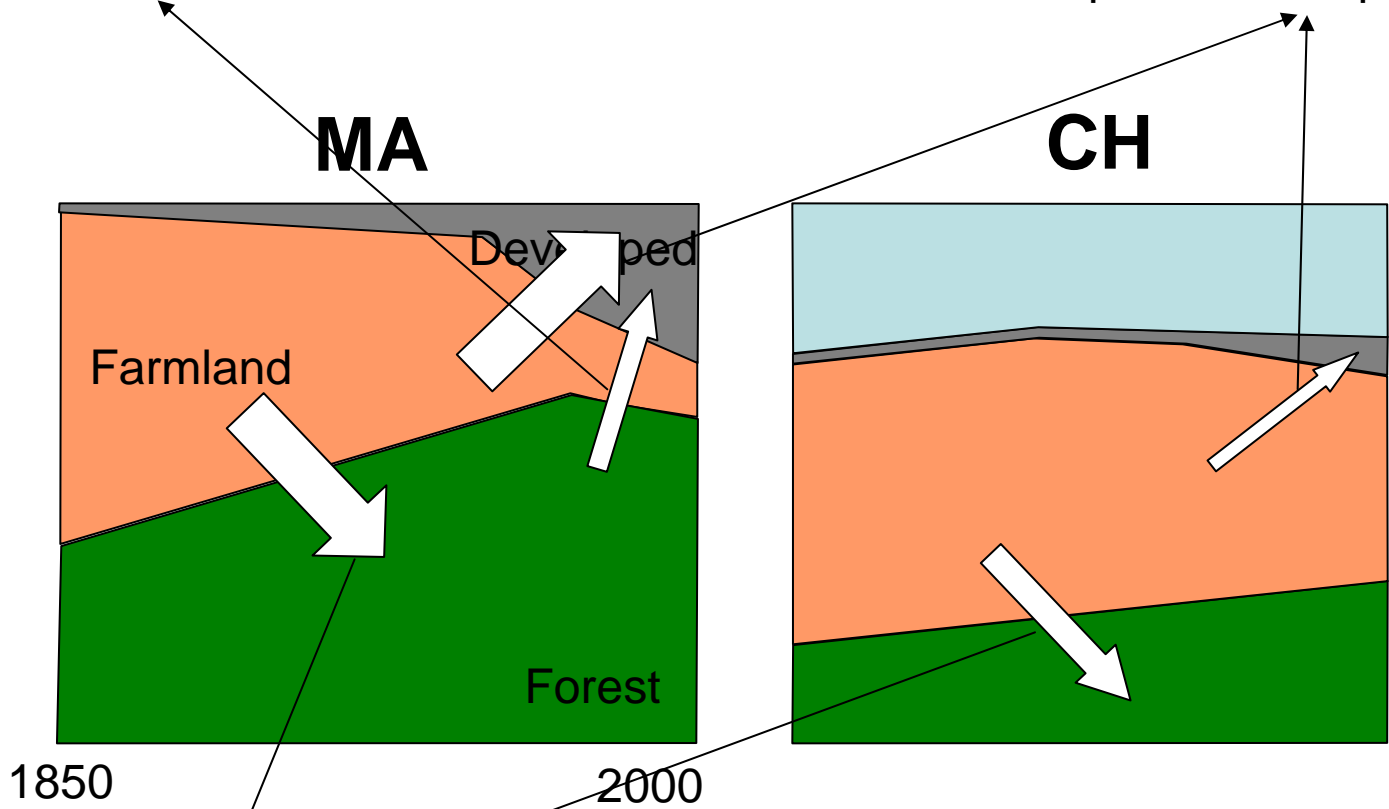
Example:
Separation of building area and
non-building area



What do policies explain?

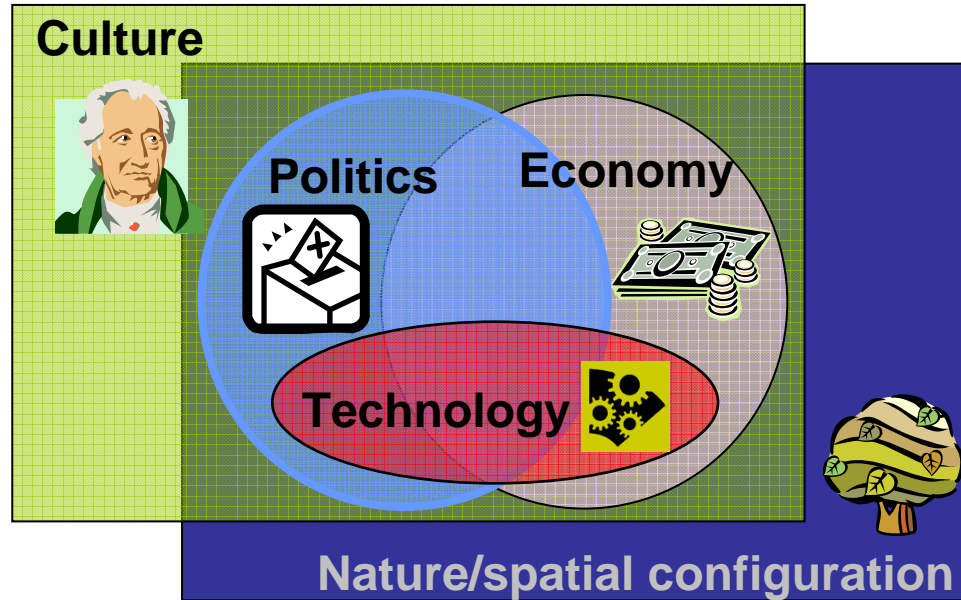
Lack of forest protection policy in MA

CH spatial development policies



CH agricultural policies

Conclusions



- **Political driving forces** do help to explain some of the differences between MA and CH
- **Cultural driving** forces are also important

Conclusions (cont.)

What do we learn from a transatlantic comparison?

- See the familiar land use history in a new context
- Ideas for scenario development
- Learning from the other side (regulation/deregulation)

Thank you for your attention

Questions?