Cross-country Comparison of Farm Size Distribution

Shingo Kimura

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Why measurement of farm size is important?

- Average farm size is often used as an indicator of structural change and sometimes as a policy target

…. Average farm size has risen only slightly during the past 50 years to a national average of two hectares……The small average farm size limits economies of scale…

…..the 2005 Basic Plan on Food, Agriculture and Rural Areas set out an ambitious vision of expanding family farms producing crops to an average size of 15 hectares.

Source: OECD Economic Survey of Japan 2013

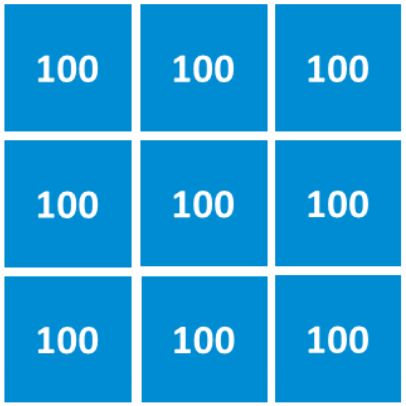
Why cross-country comparison of average farm size is difficult?

- The definition of "farm" is different across countries.

	Definition of farm
Canada	Agricultural operation that produces at least **one of the following products intended for sale**: crops, livestock, animal products, or other agricultural products.
EU	All agricultural holdings **at least 1 hectare** and those of less than 1 hectare provided the latter market a certain proportion of their output or produce more than a specified amount of output.
Japan	(1) manages more than **0.3 hectare of land**, (2) possesses planted or cultivated area or a number of livestock more than predetermined standards, (3) accepts farm work on contract.
U.S.	Sold or would normally have sold at least **$1,000 of agricultural products** during the year

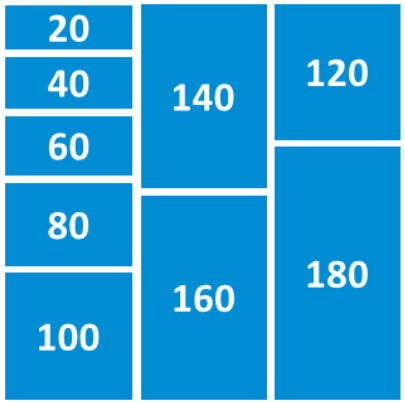
Comparisons of three summary statistics using the Lorenz curve

Land distributed equally



Mean (μ)	100
Median (m)	100
Hectare-weighted median (m_{hw})	100

Land distributed unequally across farms

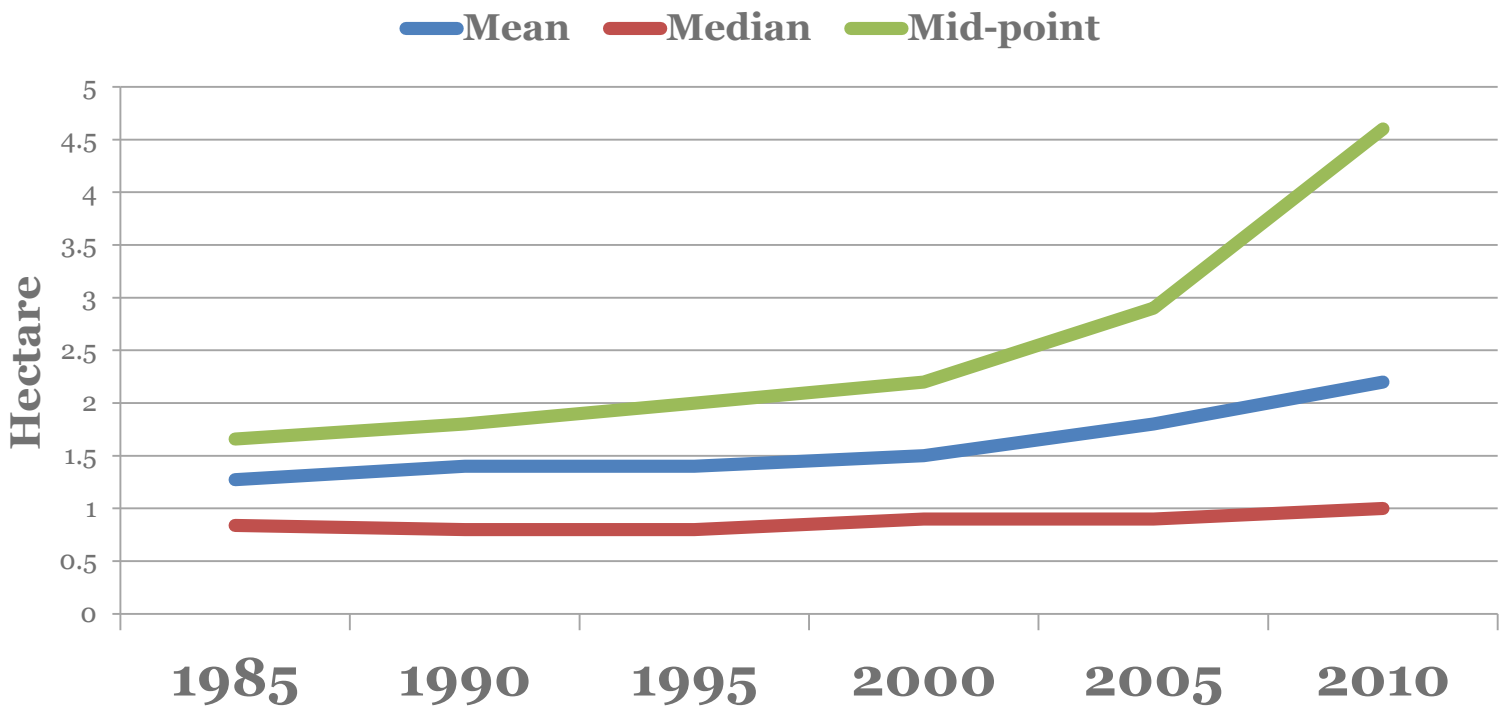


Mean (μ)	100
Median (m)	100
Hectare-weighted median (m_{hw})	140

Source: Presentation by Heiko Hansen

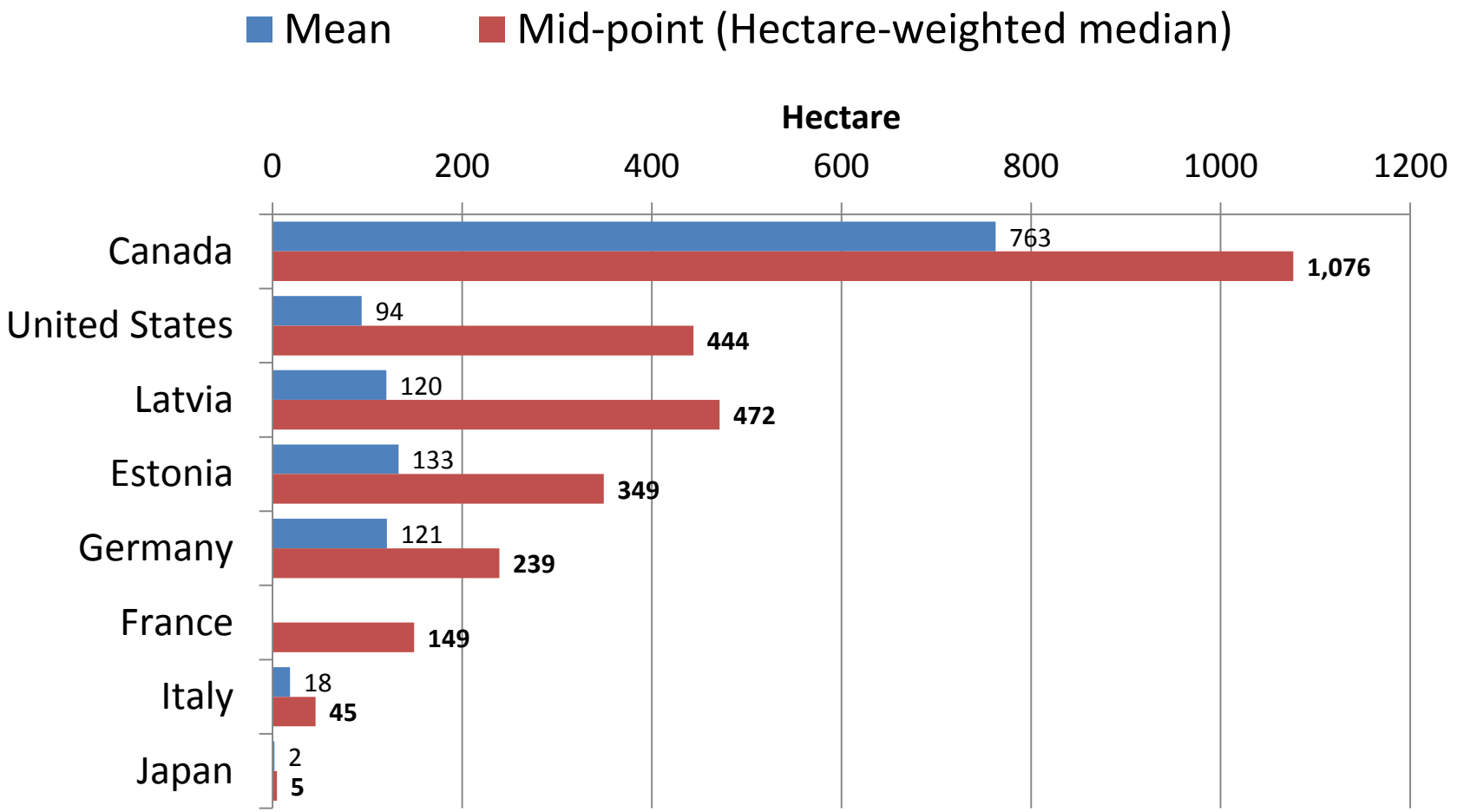
How to measure average farm size?

Average land size of field crop farms in Japan



Mid-point farm size: the threshold of farm size that half of total land is cultivated by more than this size of farm

Comparison of cropland size in 2010: Field crop farms



Market share of the largest 25% of farm in 2010: Field crop farm

% Market share the largest 25% of field crop farms in 2010

	Share in cropland use	Share in gross output	Gini coefficient
Canada	57	49	0.46
Estonia	70	71	0.60
France	n.a.	n.a.	0.53
Germany	70	63	0.60
Italy	70	63	n.a.
Latvia	83	82	0.74
Japan	71	76	0.61

Evolution of farm size in 1980-2010 for Field crop farm

Evolution of mid-point cropland size 1980-2010 (hectare)

	1980	1985	1990	1995	2000	2005	2010
Canada			532	621	774	929	1076
United States	239	251	291	324	384	453	486
Estonia					152	266	349
France*	87	88	90	110	130	140	149
Germany						252	239
Italy						33	45
Latvia						321	472
Japan		1.7	1.8	2.0	2.2	2.9	4.6

*For France, data for 1979 is taken for 1980 and 1988 for 1990. Mid-point cropland size for 1985, 1995 and 2005 was calculated as the average of the mid-point cropland size of the previous and the following period.

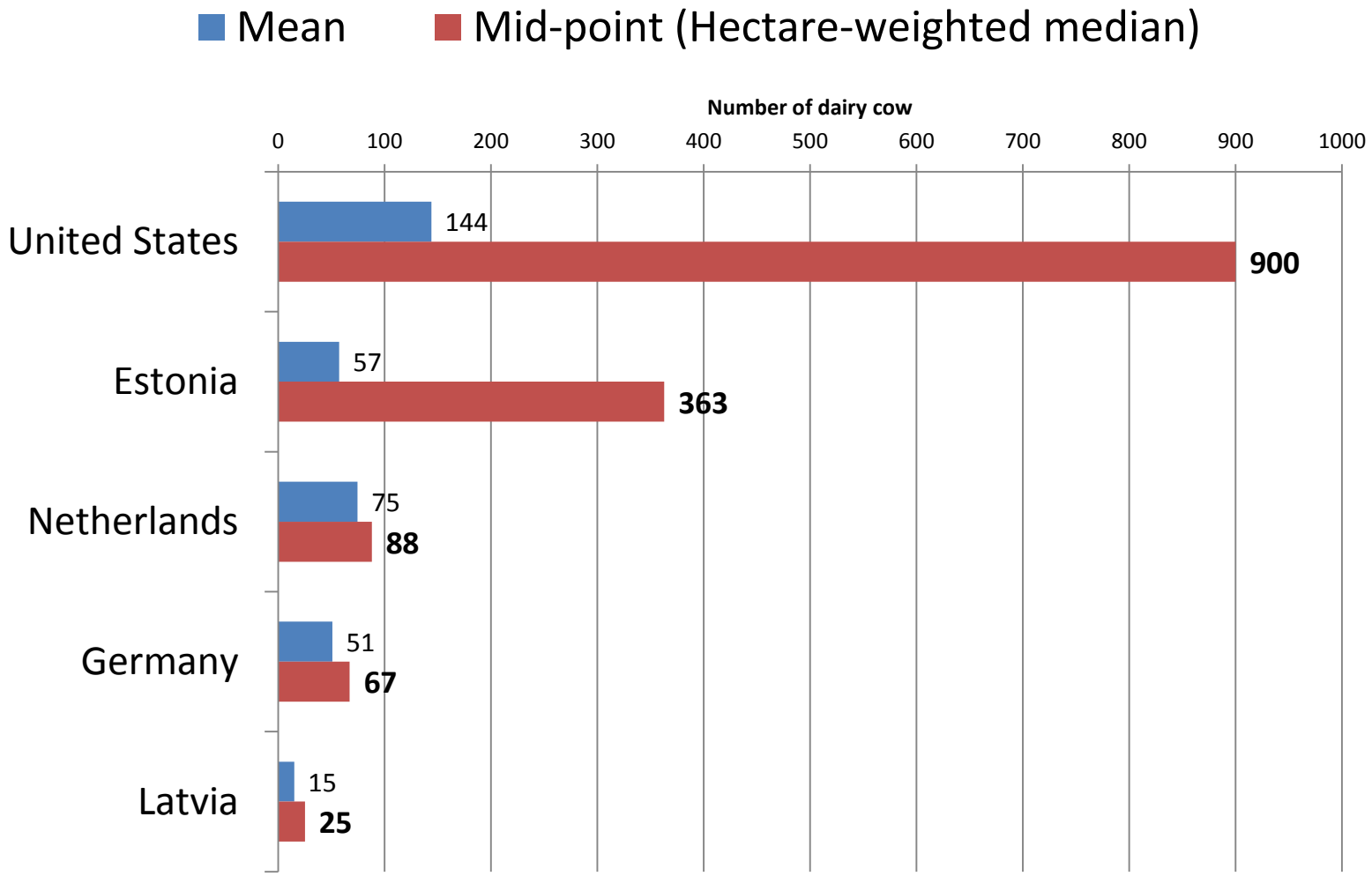
Growth rates of farm size expansion for Field crop farm

Growth rate of mid-point cropland size (%)

	1980-85	1985-90	1990-95	1995-2000	2000-05	2005-10
Canada			3.1	4.5	3.7	3.0
United States	1.0	3.0	2.1	3.5	3.3	1.4
Estonia					11.9	5.6
France*	0.4	0.3	4.1	3.4	1.4	1.3
Germany						-1.0
Italy						6.8
Latvia						8.0
Japan		1.6	2.1	1.9	5.7	9.7

*For France, data for 1979 is taken for 1980 and 1988 for 1990. Mid-point cropland size for 1985, 1995 and 2005 was calculated as the average of the mid-point cropland size of the previous and the following period.

Comparison of herd size in 2010: Dairy farms



The evolution of herd size in 1980-2010 for Dairy farm

Evolution of mid-point herd size 1980-2010

	1980	1985	1990	1995	2000	2005	2010
United States		80	101	140	275	570	900
Estonia					262	246	363
Germany						63	67
Latvia						19	25
Netherlands	51	57	52	58	62	73	88

Growth rates of herd size expansion for Dairy farm

Growth rate of mid-point cropland size (%)

	1980-85	1985-90	1990-95	1995-2000	2000-05	2005-10
United States		4.8	6.7	14.5	15.7	9.6
Estonia					-1.2	8.1
Germany						1.3
Latvia						5.7
Netherlands	2.2	-1.8	2.2	1.3	3.3	3.8

Some preliminary findings

- Comparison of per farm average size may be misleading when 1) farm size distribution is skewed and 2) comparing across countries with different farm definition
- Hectare weighted quartile (e.g., mid-point) could be complementary summary statistics to capture changes in farm-size distribution

Some preliminary findings

- Concentration of resource use and output to large size farm is advancing across countries
- Speed of farm size expansion is uneven across time due to factors driving structural change (e.g., policy reform, farm demography, market condition and technological change)

Next steps

- Cross-country comparison of changes in farm-size distribution for major agricultural sectors
- Analysis of the drivers of changes in farm size distribution and policy implications
- OECD report in 2015