

# Landschaften as Credit Purveyors The Example of East Prussia

Kirsten Wandschneider  
Occidental College

Atlanta Fed  
May 12<sup>th</sup>, 2015

# Outline of the Talk

- Background: What were Landschaften?
  - Design and operation - 'Landschaften' were public cooperative mortgage institutions, set up in the late 18<sup>th</sup> century to support the Prussian landed gentry (Junkers).
- Data: Whom did the Landschaft lend to and how much?
  - First empirical assessment of estates borrowing through the Landschaft.
  - What can we learn from the portfolio about the stability and operation of the Landschaft
- Effects: What were the economic effects of Landschafts-credit on ownership change and estate size?
  - Extension with some new data.

# Why do we care?

- Landschaften issued Pfandbriefe (covered bearer bonds), an asset class that has survived to this day and is considered extremely safe.
  - Popularity of covered bonds is growing in Europe.
  - The US has considered the introduction of covered bond legislation (HR 5823, 2010; HR940,2011) to create new investment options for mortgages.
- First successful attempt to issue credit based on mortgages in an institutionalized form.
  - Development of mortgage credit: Frederiksen (1894), Snowden (1995), Hoffman, Vinay and Rosenthal (2009)

# Why do we care? (cont.)

- Landschaften were, at the time, a new non-bank financial intermediary, with a specific design.
  - Related to credit cooperatives: Stiglitz (1990), Guinnane (1997, 2001), Armendariz de Aghion (1999)
  - Breadth of financial institutions in Germany: Guinnane (2002)
- Landschaften mattered for the long-term economic development of Prussia.
  - Political power of the Junkers: Weber (1906), Gerschenkron (1943, 1962), Hess (1990), Schiller (2003)
  - Descriptive histories of the Landschaften emphasize their role in supporting large estates, (Altrock, 1914; Mauer, 1907).
  - There are no quantitative studies of the Landschaften.

# Creation of the Landschaften

- Top-down institutions: created by the king, but administered by landholders themselves, based on the idea of a Berlin businessman (Buehring).
- The Landschaften joined all noble estates situated in a certain region in a mandatory credit cooperative, with the aim of issuing bonds (Pfandbriefe) that were jointly backed by all members.



# The Seven Years War and the Crisis of 1763

- The Seven Years War (1756-63) cements Prussia as economic and political force in Europe.
- Wartime inflation and post-war deflation (Mint edict of 1764 set the Thaler at 40% below the pre-war rate).
- Physical destruction of estates.
- Fall in land and grain prices.
- Credit Crisis: Bank failures in Amsterdam and Hamburg are transmitted to Berlin (Schnabel and Shin, 2004).

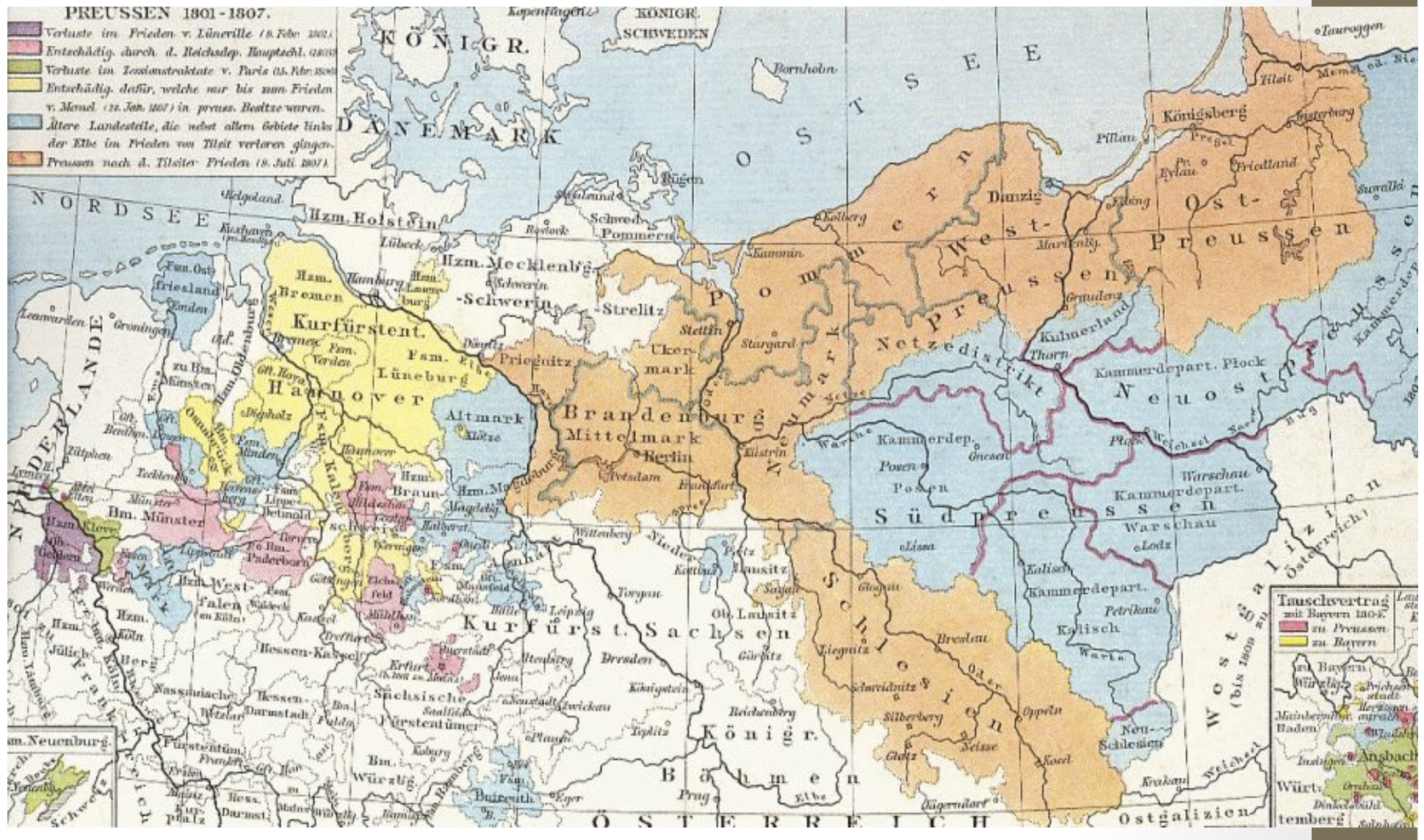
# The Seven Years War and the Crisis of 1763

- Availability of long-term private credit after 1750 set off a rise in estate prices.
- Estate prices fell with the end of the Seven Years war (Weyermann, 1910):
  - Nobles that had bought new estates were owing more than their estates were worth.
  - Outstanding loans were called back by creditors at a time when landholders were not in a position to pay.
  - Foreclosures that brought less than half of the outstanding debt value.

August 1<sup>st</sup>, 1765: 3-year moratorium on all debts called by Frederick II.



# Prussia in 1807





# General Features of the Landschaften

- Matching of lenders and borrowers.
- Reduction of transaction costs by standing ready to extend credit to borrowers and selling credit instruments to lenders.
- Standardization of the debt instrument (attractive to a wider audience of lenders).

Landschaften did not loan out their own capital, they were pure intermediators between borrowers and lenders.

Landschaften also administered the interest payments

# Adverse Selection and Moral Hazard

- Mandatory membership, in return members had a 'right to credit'
- Loan limit – based on last sale price or the assessed net profit (GSRE):
  - Limited to  $\frac{1}{2}$  or  $\frac{2}{3}$  of the last sale price or 20 times the net profit.

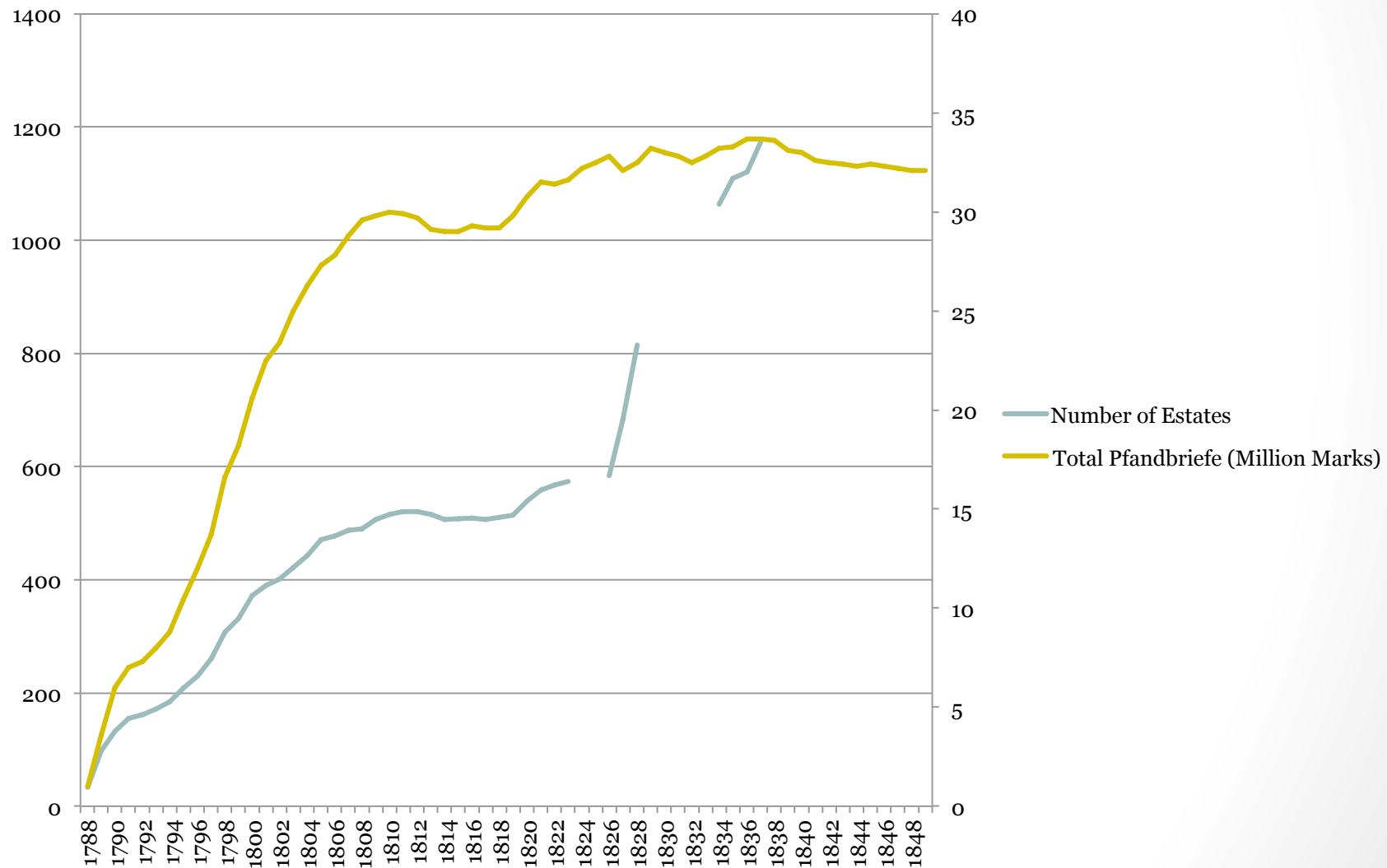
Joint liability and dual recourse: Pfandbriefe constituted two legal obligations:

- 1) Claim against the Landschaft (backed by liquid assets of the Landschaft and all member estates).
  - 2) Claim against the estate that the Pfandbrief was tied to.
- ➔ Improved monitoring

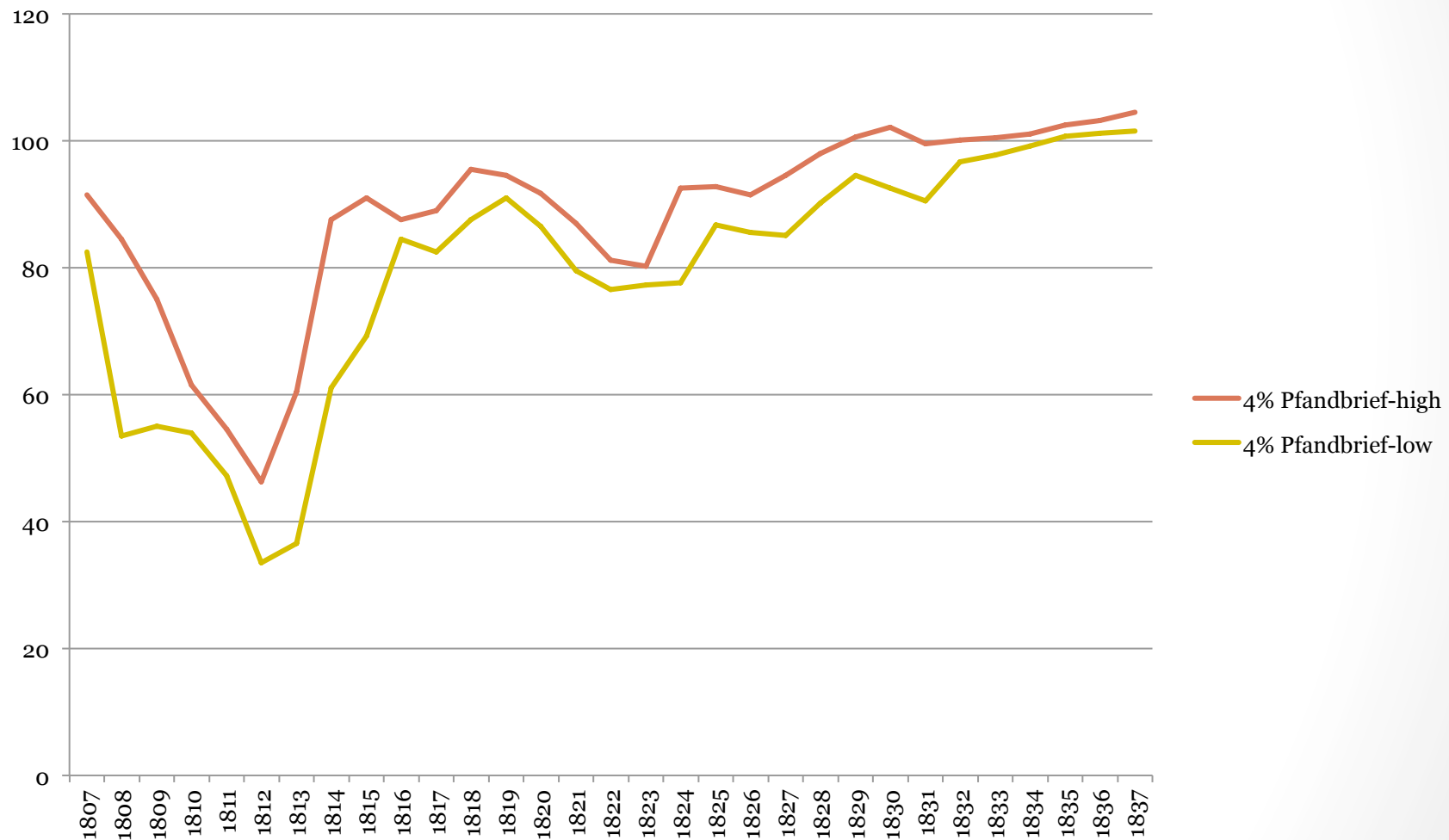
# Auditing and Enforcement

- Landschaft as single enforcer.
- Landschaften had the right to foreclose on estates that were in arrear with their interest payments.
- Reliance on local monitors and voluntary labor.
  - Local assessors were personally liable if an estate went into default and assessors had overestimated the value of the estate

# Figure 1: Number of Estates in the East Prussian Landschaft and total Pfandbrief Amount Issued (1788-1850)



## Figure 2: High and Low Prices of 4% Pfandbriefe for the East Prussian Landschaft (1807-1837)





# Data

- List of 554 estates that borrowed from the East Prussian Landschaft in 1822/23 (estate name, owner, location, size of the estate, assessment, size of the loan, and outstanding interest payments, estates taken into receivership).
- List of 887 estates that had borrowed from the Landschaft in 1829 (owner in 1806 & 1829, type of transfer).
- 1834 Matrikel (official list, sanctioned by the king, of 1410 Rittergüter/noble estates in East Prussia).
- 1796 Census (estate name, owner, size of the estate)
- Historisch-Geographischer Atlas des Preussenlandes (Mortensen et al 1968, geocodes - 1780)

# Sample Page

185.	Nehlaucken .	meist Drenow Drenow v. Drenow	Hildd Fankel Finkelstein	in familiärer Licitacion anstanden.
186.	Nelchden .	h. f. h. v. h. v. h. v. h. Schach v. Wittenau	h. f. Winkler	in offener Licitacion anstanden.
187.	Neludwiese .	h. f. v. Wenzler Kj.	h. f. v. Erhardt.	in offener Licitacion anstanden.
188.	Nenkenen .	h. f. v. Drenow Holzt.	h. f. Joh. Carl Holzt.	anab.
189.	Nutgethen .	h. f. v. Drenow v. Hageman	Drenow	— — — —
190.	Nejken .	h. f. v. Drenow K. Drenow v. Drenow	h. f. v. Drenow v. Drenow	in offener Licitacion anstanden.
191.	Niggen .	h. f. v. Drenow v. Drenow	h. f. v. Drenow v. Drenow	anab.
192.	Niggenburg .	h. f. v. Drenow v. Drenow	h. f. v. Drenow v. Drenow	anab.

# Table 1: Comparison of Matched and non-Matched Estates

	Matched to Estate Register	Not Matched to Estate Register
Capital Assessment in 1823 (marks)	107,824.3	109,295.9
Net Profit 1823 (marks)	5,374.27	6,020.89
Estate Size 1823 (hectares)	846.69	993.02
Loan-to-value Ratio 1823	55.25	47.30
Interest Arrears 1823 (as share of loan amount)	4.51	4.11

## Table 2: Estates in the 1822/23 Survey

	Angerburg	Königsberg	Mohrungen	Total
Number of Estates	140	252	162	554
Average Size (hectares)	580.97	879.54	1050.34	862.01
Capital assessment (mark per hectare)	160.48	172.17	112.24	148.69
Net Profit (mark per hectare)	8.19	8.50	5.19	7.37
Revenues from Farming (mark per hectare)	4.35	5.82	4.03	4.87
Revenues from Animal Husbandry (mark per hectare)	3.42	3.29	2.68	3.14
Revenues from Brewing (mark per hectare)	2.22	0.78	0.71	1.12
Average Loan-to-value Ratio	55.99	51.05	58.03	54.31
Average Interest Arrears (as share of loan)	2.71	2.76	8.61	4.46

**Table 3: Estates  
by Size Category**

	> 1000 ha	999-500 ha	499-100 ha	<100 ha	Total
Estates listed in the 1834 register	192	320	841	57	1410
Estates listed in the register and the 1822/23 Landschaft-Survey	123	149	186	10	468
Share of Estates borrowing from the Landschaft	64.1%	46.6%	22.1%	17.5%	33.2%
Average capital assessment (marks)	206,834.5	99,938.6	48,249.2	18,220.3	107,995.0
Average Landschafts-Loan (marks)	116,434.1	57,425.7	26,475.8	8,407.5	57,115.6
Average Loan-to-value Ratio	56.7%	58.9%	56.6%	44.8%	54.3%
Average Interest Arrears (marks)	11,750.7	2,269.3	1,155.1	306.3	3,698.4
Average Interest Arrears as Share of the Loan	8.6%	4.3%	3.5%	2.8%	4.5%



# Table 4: Probability of Landschafts Loans, 1806-29

VARIABLES	(1)	(2)
	Logit (marginal effects) Dependent Variable: Loan Dummy 1823	Logit (marginal effects) Dependent Variable: Loan Dummy 1829
Total Size (hectares)	0.00004 (2.51)*	0.00004 (2.03)*
Mohrungen	-0.019 (0.58)	-0.028 (0.76)
Königsberg	-0.013 (0.42)	-0.017 (0.49)
Noble Owner	0.089 (3.16)**	0.118 (3.82)**
Gender (female=1)	0.004 (0.10)	-0.006 (0.12)
Köllmer	-0.366 (18.34)**	-0.348 (12.24)**
Pseudo Rsquared	0.1095	0.0817
Observations	1410	1410

p-values in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

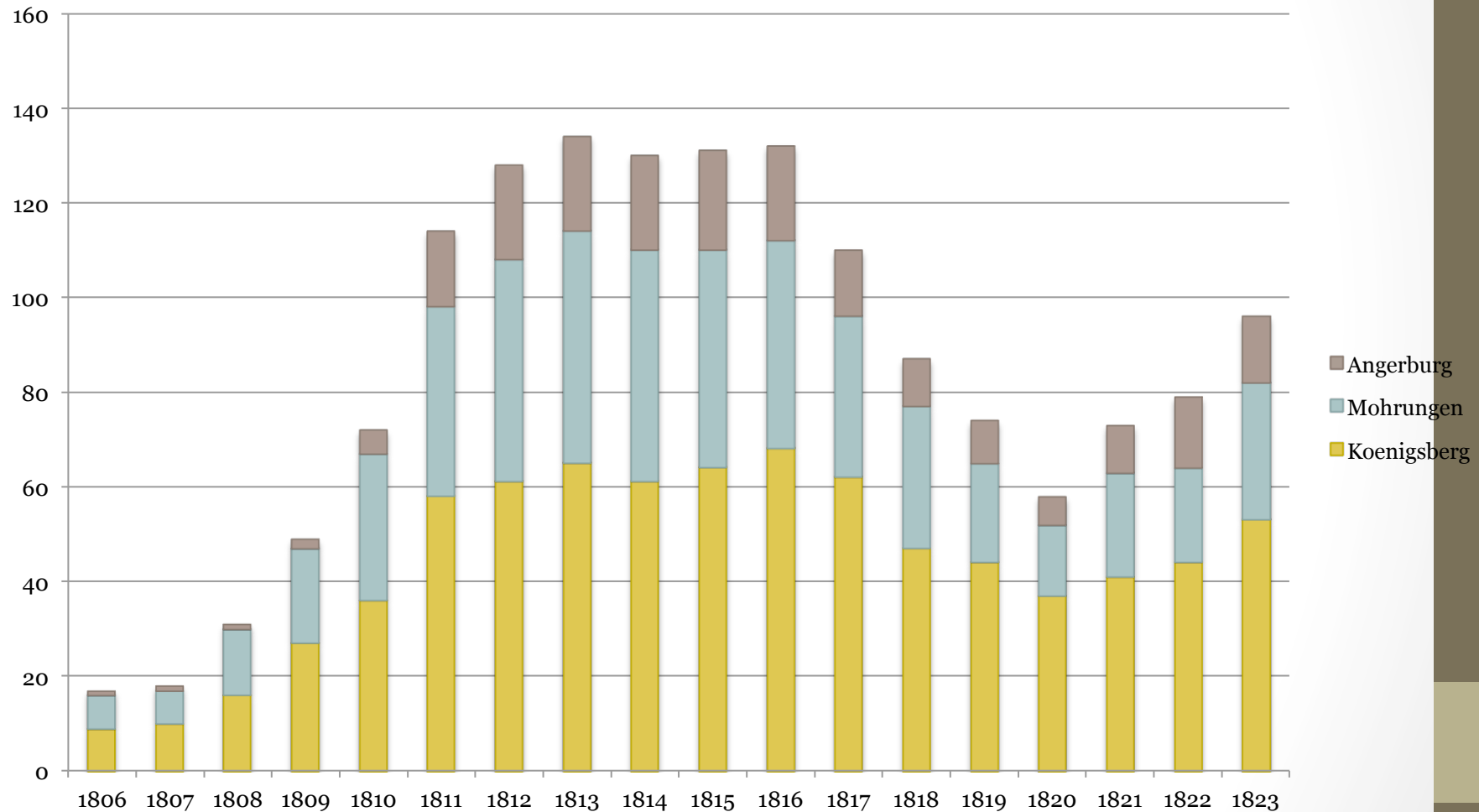
**Table 5:  
Probability  
and Size of  
Outstanding  
Interest  
Payments**

VARIABLES	(1) Logit (me)	(2) Logit (me)	(3) OLS	(4) OLS
Total Size (hectares)	0.0001 (3.73)**	0.0001 (3.04)**	0.003 (5.22)**	0.003 (4.50)**
Loan-to-value Ratio	0.007 (4.58)**	0.010 (5.17)**	0.162 (5.94)**	0.196 (5.96)**
Mohrungen	0.031 (0.46)	-0.004 (0.05)	4.308 (3.08)**	4.567 (2.65)**
Königsberg	-0.189 (3.11)**	-0.224 (2.88)**	-0.097 (0.08)	-0.248 (0.14)
Female	0.001 (0.01)	-0.057 (0.58)	-0.058 (0.03)	-0.616 (0.30)
Net Profit	0.001 (0.17)	0.025 (1.35)	0.034 (0.29)	0.079 (0.29)
Farming		-0.025 (1.32)		-0.004 (0.01)
Animal Husbandry		-0.022 (0.83)		-0.139 (1.50)
Brewing		-0.012 (0.64)		0.054 (0.15)
Constant			-8.364 (3.81)**	-10.497 (3.89)**
Observations	438	353	438	353
R-squared	0.10	0.14	0.18	0.19

P-values in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Figure 3: Receivership and Foreclosure



# Receivership & Foreclosure cont.

- Between 1806-23: 239 estates in receivership and 121 estates liquidated by the Landschaft.
- For 118/121 estates, the sale value covered the outstanding loan amount.
- For 87/121 estates, the sale value covered the outstanding loan amount, plus interest arrears.

# Changes in Estate Size

- Owners of large estates used the Landschaft to further enlarge their holdings (Schiller, 2003; Schissler, 1978)
- 419 estates that list estate size in 1823 and 1834
- 127 estates larger, 1 same size, 291 estates smaller
- Data is noisy, but there does not appear to be a systematic enlargement of estates using the Landschaft after 1823.



# Changes in Ownership

- Landschaft could have an ambiguous effect on ownership transfer of the estate:
  - Landschafts loan reduces the need to sell
  - Landschafts loan increases the ease of a sale
- After 1807 estates could be sold to non-nobles.
- Ownership of an estate carried voting rights to the local and district assembly.
- 1829 data compare ownership between 1806-1829 and provide information on the type of transfer.

# Table 6: Types of Ownership Change

VARIABLES	(1) Logit (me) Dependent Variable: Same Owner	(2) Logit (me) Dependent Variable: Inheritance	(3) Logit (me) Dependent Variable: Sale	(4) Logit (me) Dependent Variable: Foreclosure
Total Size (hectares)	0.00002 (1.01)	0.0001 (3.93)**	-0.0001 (2.19)*	-0.00004 (0.94)
Loan-to-value Ratio	0.00001 (0.02)	-0.005 (5.03)**	0.0002 (0.17)	0.006 (3.91)**
Share of Interest Arrears	-0.004 (1.40)	-0.001 (0.64)	-0.014 (3.60)**	0.019 (5.03)**
Königsberg	0.022 (0.49)	-0.061 (1.41)	0.049 (1.01)	0.027 (0.43)
Mohrungen	0.033 (0.69)	-0.081 (1.86)	0.178 (3.02)**	-0.111 (1.64)
Noble Owner	0.119 (3.15)**	0.107 (2.62)**	-0.069 (1.90)	-0.102 (1.90)
Observations	467	467	467	467

P-values in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Pseudo Rsquared = 0.12

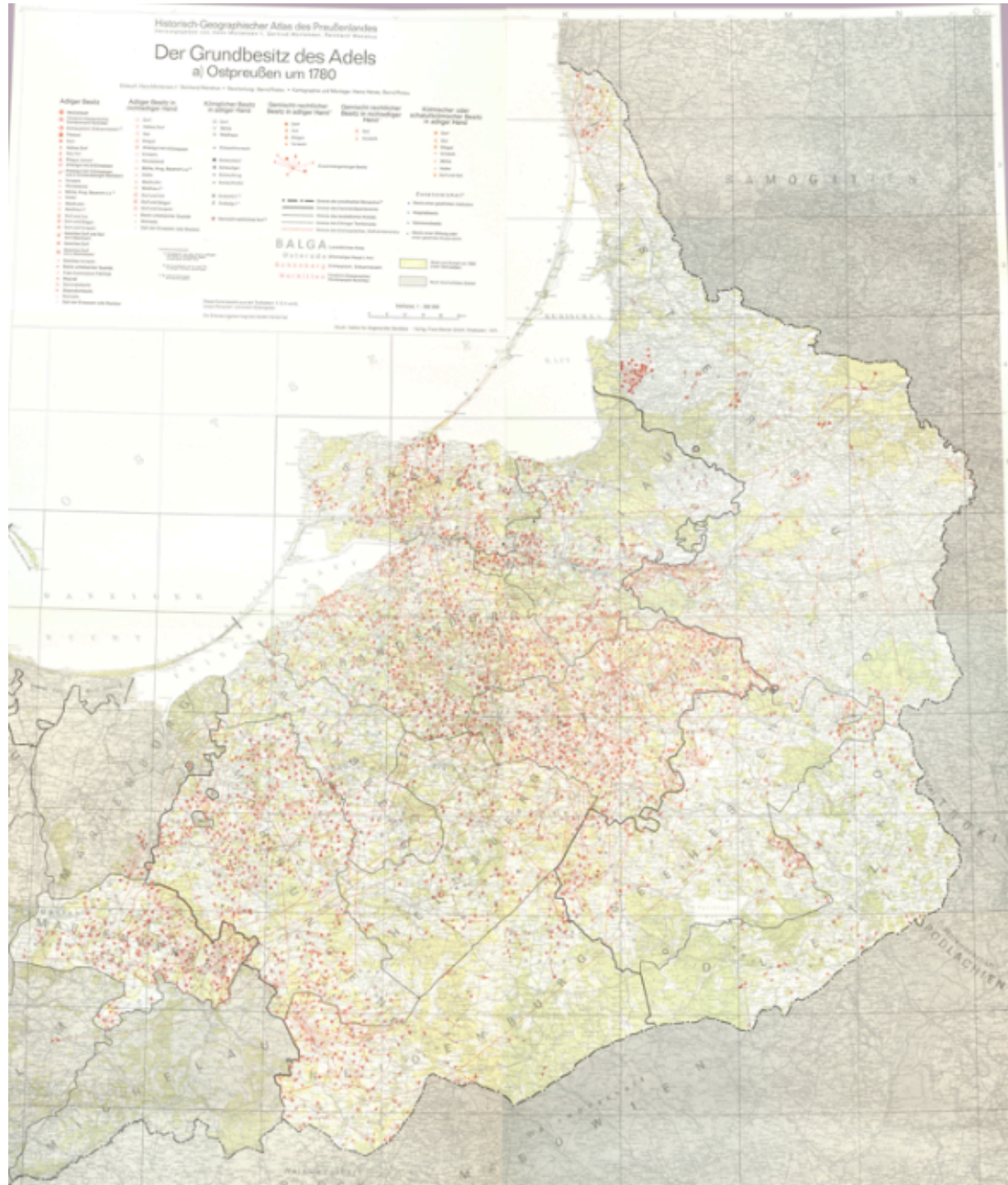
# Some New Data

- 1796 Estate Census
  - Estate name, owner, size, parts or associated estates
- Historisch-geographischer Atlas des Preußenlandes
  - Mortensen et al. 1968 – geocodes
- Test for the impact of the Landschaften on landownership and estate size.

## a) Ostpreußen um 1780

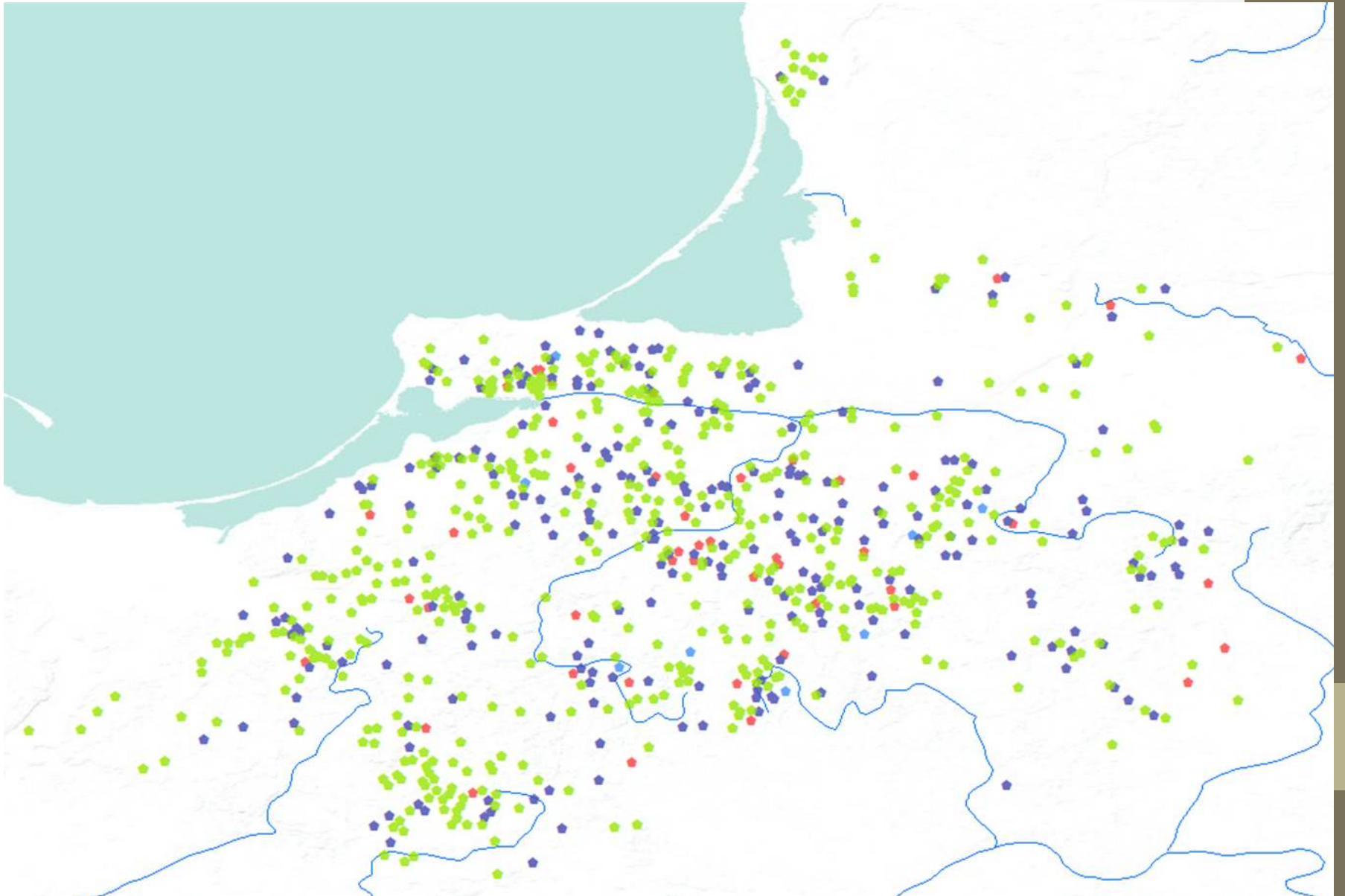
Adipose tissue in normal-weight men	Visceral adipose tissue in adipose men	Subcutaneous adipose tissue in adipose men	Subcutaneous adipose tissue in normal-weight men
--	---	---	---

- [illegible]



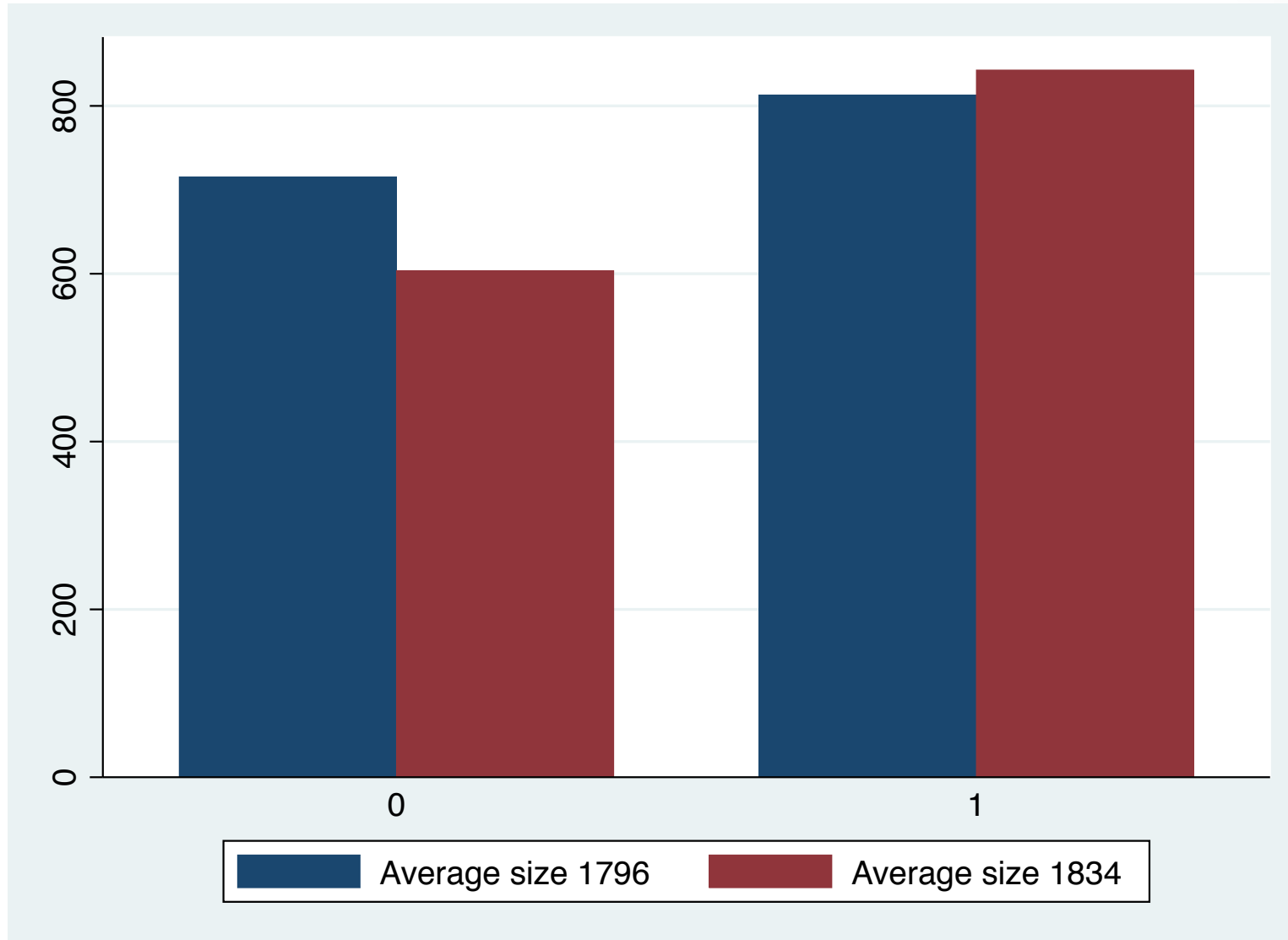


## Figure 4: Borrowing across Space





# Figure 5: Estate Size by Year and Borrower Status



# Table 8: Changes in Estate Size

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
combined_hectares1796	0.524*** (0.0721)	0.526*** (0.0722)	0.523*** (0.0721)
member1823	148.1* (81.77)		
member1829		120.1 (81.07)	
member1823and29			158.9* (81.89)
Constant	248.1*** (74.30)	248.5*** (77.34)	245.1*** (74.06)
Observations	455	455	455
R-squared	0.115	0.112	0.115

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Table 9: Estate Holdings by Nobles

	adelm
member1823	0.503 (3.98)**
mohrunenm	0.313 (1.88)
koenigsbergm	0.719 (4.87)**
thectaresm	0.001 (8.03)**
_cons	-1.827 (13.68)**
<i>N</i>	1,404
member1829	0.547 (4.45)**
mohrunenm	0.317 (1.90)
koenigsbergm	0.722 (4.89)**
thectaresm	0.001 (8.03)**
_cons	-1.895 (13.76)**
<i>N</i>	1,404

\*  $p < 0.05$ ; \*\*  $p < 0.01$

# Conclusion

- The East Prussian Landschaft was effective in providing credit to Prussian noble estates.
- Landschaften relied on joint liability, local monitoring and forced membership to avoid problems of moral hazard and adverse selection.
- Lending was concentrated on very large estates (>1000 ha).
- These same large landowners were also more likely to be in arrear with their interest payments, nevertheless large landowners did not capture the institution.

# Conclusion cont.

- Landschaften did facilitate foreclosures and the transfer of distressed economic estates, but sales were not driven by an estate's loan-to-value ratio.
- Landschaften did not trigger a systematic enlargement of estates after 1823, but when comparing data from 1796-1834 the effect is significant.
- Borrowing from the Landschaft in 1823 and 29 predicts noble owner status.
- Future work will expand the timing as well as the use of space in the analysis of the Landschaften