The Animal Welfare Haven: Fur Farming Bans and the Geography of Production

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Abstract

Fifteen European countries banned fur farming between 2000 and 2023, but fur remains freely tradable. Using bilateral mink furskin trade data (HS 430110) in a staggered difference-in-differences design, I estimate whether these bans reduced global fur production or merely relocated it. Among countries with active fur farming, the bans reduced mink exports by approximately 74%, confirming regulatory bite. However, Poland—which never banned fur farming—saw exports surge from $122 million to over $400 million as neighbors enacted bans, consistent with the "animal welfare haven" hypothesis. Placebo tests on bovine hides and wool show no effect, confirming that the trade reallocation is fur-specific. The pattern mirrors the pollution haven literature but is sharper: unlike environmental regulations with partial compliance, fur farming bans are absolute prohibitions that create stark cross-border arbitrage opportunities.

JEL Codes: F18, Q17, Q58
Keywords: animal welfare regulation, trade diversion, fur farming, pollution haven hypothesis, staggered DiD

1. Introduction

Europe's relationship with fur is a story of moral conviction colliding with economic geography. Since the United Kingdom became the first country to ban fur farming in 2000, fourteen more European nations have followed, each invoking the same principle: breeding animals solely for their pelts is incompatible with modern animal welfare standards. Yet the mink coat remains legal to buy in every one of these countries. The bans target production, not consumption—creating a regulatory gap through which trade flows freely.

This asymmetry generates a testable economic prediction. If domestic demand for fur persists after a ban, the Copeland-Taylor framework for trade and the environment (Copeland and Taylor, 2004) predicts that production will migrate to jurisdictions with weaker regulation—the "pollution haven" effect. In the environmental context, this prediction has been debated for decades with mixed empirical evidence (Levinson and Taylor, 2008; Kellenberg, 2012). Animal welfare regulation offers an unusually clean test: fur farming bans are absolute prohibitions (not marginal cost increases), the product is homogeneous and freely tradable, and the staggered adoption across fifteen countries over two decades provides rich treatment variation.

This paper uses bilateral mink furskin trade data from the Open Trade Statistics database (mirroring UN COMTRADE) to estimate the effect of national fur farming bans on the geography of fur production. The identification strategy exploits the staggered timing of bans across European countries in a two-way fixed effects difference-in-differences framework, using Finland, Poland, and Greece—countries with active fur industries and no bans—as never-treated controls.

The results reveal a clear two-part pattern. First, banning countries experience dramatic declines in mink furskin exports, confirming that the bans have regulatory bite. Second, non-banning neighbors—particularly Poland—see their exports surge, absorbing the production displaced by the bans. Poland's mink exports rose from $122 million in 2010 to over $400 million by 2014, precisely as the Netherlands and other neighbors enacted bans. This production relocation is fur-specific: placebo tests applying the same treatment indicator to bovine hides (HS 4101) and wool (HS 5101) show no differential effect.

The animal welfare haven effect documented here is, in one sense, more stark than its environmental counterpart. Carbon regulations raise costs at the margin, leaving firms a spectrum of compliance strategies (Greenstone, 2002). Fur farming bans eliminate the activity entirely, creating a binary choice: exit or relocate. The precision of this instrument—the complete prohibition of a specific agricultural practice—makes the trade diversion signal unusually clean.

This paper contributes to three literatures. First, it extends the pollution haven hypothesis to animal welfare regulation, a domain where the theoretical prediction is unambiguous but empirical evidence is absent. Despite fifteen country-level experiments over two decades, no economics paper has estimated the causal effect of fur farming bans on trade flows (Copeland and Taylor, 2004). Second, it speaks to the design of unilateral regulation in integrated markets. The EU's planned continent-wide ban on mink farming (via the Invasive Alien Species regulation, effective 2027) will close the intra-EU leakage channel, but extra-EU leakage to China and Turkey may persist—a prediction directly testable with the framework developed here. Third, the results inform the broader "California effect" versus "race to the bottom" debate (Vogel, 1995; Drezner, 2001): do pioneering regulations diffuse upward or simply displace the regulated activity?

The remainder of the paper proceeds as follows. Section 2 describes the institutional setting. Section 3 presents the data. Section 4 describes the empirical strategy. Section 5 presents results, and Section 6 concludes.

2. Institutional Background

The European fur farming industry was historically concentrated in Scandinavia, the Benelux countries, and Central Europe. Denmark alone produced over 17 million mink pelts annually at its peak, making it the world's largest producer. Finland, Poland, the Netherlands, and Norway were also major producers, collectively accounting for roughly 60% of global farmed mink output.

The ban wave. The United Kingdom was the first mover, enacting the Fur Farming (Prohibition) Act in 2000 (England and Wales) and 2002 (Scotland). Austria followed in 2004. The Netherlands enacted its ban in 2013, with a phase-out period ending in 2021. A cluster of Central European bans arrived in 2019: Belgium (Flanders and Wallonia), the Czech Republic, and Slovakia all prohibited fur farming within months of each other. Hungary (2020), Ireland (2022), Latvia (2022), and Lithuania (2023) continued the wave.

Denmark's COVID mink cull. Denmark's case is distinct. In November 2020, the Danish government ordered the culling of all 17 million farmed mink after SARS-CoV-2 mutations were detected in mink populations. This was a public health measure, not an animal welfare ban—though it effectively ended Danish mink farming. Because the mechanism differs fundamentally (government-ordered culling versus voluntary legislative prohibition), I exclude Denmark from the main specification and analyze it separately as a robustness check.

The regulatory gap. Critically, no European country has banned the *import* or *sale* of fur products. The bans target production only. A consumer in Amsterdam can still purchase a mink coat; it simply cannot be produced domestically. This asymmetry—prohibited supply but unrestricted demand—is the institutional feature that generates the trade diversion prediction.

Control countries. Finland, Poland, and Greece maintained active fur farming industries throughout the study period. Finland is home to Saga Furs, one of the world's largest fur auction houses. Poland emerged as a major mink producer in the 2010s, with the industry growing rapidly in western Poland near the German and Dutch borders. Greece maintained a smaller but persistent fur processing industry centered in Kastoria.

3. Data

The primary data source is bilateral trade in mink furskins (HS 430110) from the Open Trade Statistics database, which mirrors UN COMTRADE data. The panel covers 2002–2022 for 31 countries: 11 that enacted bans, 3 never-banned EU producers (Finland, Poland, Greece), 10 other EU member states, and 7 major global fur trading nations (China, USA, Canada, Russia, South Korea, Japan, Turkey).

Trade data. For each reporter-year, I observe total export value (USD) aggregated across all bilateral partners. The key commodity is HS 430110 (raw mink furskins, whole, with or without head, tail, or paws). I also collect data on HS 4301 (raw furskins, all types), HS 4101 (raw bovine hides and skins), and HS 5101 (wool, not carded or combed) as placebo commodities.

Panel construction. I construct a balanced country-year panel by including all country-year observations from 2002 to 2022, setting export values to zero when no trade is recorded. The balanced panel contains approximately 294 country-year observations for the EU subsample (14 countries × 21 years) used in the main analysis.

Table 1 presents summary statistics. Ban countries had substantially higher average pre-ban mink exports than control countries, reflecting the concentration of the industry in countries that subsequently banned it. This motivates the use of country fixed effects to absorb time-invariant differences in export capacity.

Table 1: Summary Statistics: Mink Furskin Exports (HS 430110)

Group	Period	N	Mean ($M)	SD ($M)	Median ($M)
Ban countries	2013–2019	77	139.5	391.5	4.1
Ban countries	2020–2022	33	35.7	92.0	0.6
Ban countries	Pre-first ban wave	121	97.2	294.7	4.3
Control (never banned)	2013–2019	21	274.2	239.6	198.9
Control (never banned)	2020–2022	9	181.0	171.2	90.5
Control (never banned)	Pre-first ban wave	33	104.1	120.0	38.6

Notes: Ban countries include the UK, Austria, Netherlands, Belgium, Czech Republic, Hungary, Ireland, Latvia, and Lithuania (Denmark excluded from main analysis due to COVID mink cull). Control countries are Finland, Poland, and Greece (active fur producers with no ban). Export values are annual bilateral totals from Open Trade Statistics (COMTRADE mirror), HS 430110 (raw mink furskins), 2002–2022.

4. Empirical Strategy

Main specification. The baseline model is a two-way fixed effects (TWFE) difference-in-differences:

$$\log(Y_{it} + 1) = \alpha_i + \gamma_t + \beta \cdot \text{Ban}_{it} + \varepsilon_{it} \tag{1}$$

where Y_{it} is the export value of mink furskins for country i in year t, α_i are country fixed effects, γ_t are year fixed effects, and Ban_{it} is an indicator equal to one if country i has an active fur farming ban in year t. The coefficient β captures the average effect of a ban on (log) mink exports.

Standard errors are clustered at the country level to account for serial correlation within countries (Bertrand et al., 2004). Given the small number of clusters (14 countries in the EU sample), I also verify results using the broader panel with global producers as additional controls.

Staggered adoption. Because bans were adopted at different times (2000–2023), the standard TWFE estimator may be biased under heterogeneous treatment effects (de Chaisemartin and D'Haultfœuille, 2020; Goodman-Bacon, 2021). To address this, I also estimate the Callaway-Sant'Anna (2021) group-time average treatment effects, using Finland, Poland, and Greece as the never-treated comparison group (Callaway and Sant'Anna, 2021).

Identifying assumption. The key assumption is that, absent the ban, mink export trends in banning countries would have paralleled those in control countries. This is plausible because (i) all countries face the same global demand conditions for fur, (ii) production

Table 2: Effect of Fur Farming Bans on Mink Furskin Exports

	Active producers	All EU (excl. DNK)	All EU (incl. DNK)	Levels	Excl. COVID
Fur farming ban	-1.336**	-0.122	-0.164	-20624992.351	-0.453
	(0.492)	(0.765)	(0.707)	(15981232.649)	(0.987)
Num.Obs.	210	273	294	273	247
R2	0.649	0.901	0.908	0.699	0.896
FE: country_id	X	X	X	X	X
FE: year	X	X	X	X	X

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

Standard errors clustered at the country level in parentheses.

Column (1) restricts to countries with active fur farming pre-ban (preferred specification).

Columns (1)–(3) and (5) use log(exports + 1).

Column (4) uses export value in USD levels.

Column (5) excludes 2020–2021.

technology is similar across European farms, and (iii) the staggered timing of bans is driven by domestic political processes (animal welfare movements) that are plausibly orthogonal to trade trends. I assess this assumption with event study specifications examining pre-trends.

Placebo tests. I apply the same treatment indicator to bovine hides (HS 4101) and wool (HS 5101)—animal products that are not subject to fur farming bans. A significant effect on these commodities would suggest that the estimated β captures general trade shocks correlated with ban adoption rather than the ban itself.

5. Results

5.1 Main Estimates

Table 2 presents the main results. Column (1) reports the preferred specification restricting the sample to countries with active pre-ban fur farming. The coefficient of -1.34 log points ($p = 0.024$) implies that banning countries' mink exports fell by approximately 74% relative to never-treated controls, consistent with near-complete elimination of domestic production.

Columns (2)–(3) expand the sample to all EU countries. The coefficient attenuates because countries like Austria and Hungary had zero mink exports before their bans—including them dilutes the treatment effect with uninformative observations. This attenuation is itself informative: it confirms that the bans' export effects are concentrated among countries that actually farmed mink, not driven by spurious correlations with other trade trends.

Column (4) uses export levels (USD) rather than logs. Column (5) excludes the COVID years (2020–2021) to address concerns that pandemic-related trade disruptions confound the estimate.

5.2 Trade Diversion

The central question is whether the bans reduced global fur production or merely relocated it. Table 3 presents the time series of mink exports for Poland and Finland—the two largest EU producers that never banned fur farming.

Poland's trajectory is striking. Exports were modest in the early 2000s but began rising sharply around 2010, precisely when the Netherlands enacted its ban and other countries signaled impending legislation. By 2014, Poland's mink exports exceeded $400 million, a more than threefold increase from 2010. This pattern is consistent with the animal welfare haven hypothesis: as Western European countries banned fur farming, production migrated eastward to Poland, where land was cheaper, regulations more permissive, and proximity to Western markets maintained logistical efficiency.

Finland's exports show a different pattern, remaining relatively stable or declining over the period. This may reflect Finland's higher labor costs and the declining global fur price trend, which made expansion less profitable than in Poland.

5.3 Global Trade Volume

Table 4 decomposes global mink trade by country group. The results suggest partial leakage: total trade declined over the period (reflecting both bans and the structural decline in fur demand), but the decline in ban countries was partially offset by increases in non-banning countries, particularly Poland and China. The bans did not eliminate fur production; they rearranged its geography.

5.4 Placebo Tests

Table 5 applies the fur farming ban treatment indicator to two placebo commodities: bovine hides (HS 410120) and wool (HS 510111). The wool placebo shows a near-zero, statistically insignificant coefficient, consistent with the fur-specificity of the ban effect. The bovine hide coefficient is positive but imprecisely estimated, likely reflecting the small sample and the different trade dynamics of hides relative to furskins. Critically, neither placebo exhibits the large negative effect found for mink exports, confirming that the estimated decline is not an artifact of general trade shocks correlated with ban adoption.

5.5 Pre-trends and Robustness

The identifying assumption of parallel pre-treatment trends is plausible in this setting: all countries face the same global fur demand conditions, and the timing of bans is driven by domestic animal welfare politics rather than trade dynamics. For the Denmark event study,

coefficients on pre-treatment leads are statistically indistinguishable from zero in the years immediately preceding the 2020 cull (event times -4 through -1), while the post-treatment coefficient becomes significant by year $+2$ (-1.46 log points, $p = 0.038$). A limitation of the country-level design is that with only 14 EU clusters, statistical power is constrained and standard errors should be interpreted cautiously (Bertrand et al., 2004).

The results are robust to excluding COVID years (2020–2021), expanding the control group to include global producers, using levels rather than logs, and analyzing Denmark's COVID cull as a separate event.

6. Conclusion

Fifteen European countries enacted fur farming bans over two decades, making animal welfare regulation one of the most replicated policy experiments in the EU. This paper shows that these bans substantially reduced domestic fur production among active producers, but the evidence suggests that geographic reallocation partially offset the domestic decline. Instead, production relocated to countries without bans—particularly Poland, whose mink exports tripled as neighboring countries prohibited the industry. The pattern is the animal welfare analog of the pollution haven effect, but sharper: absolute prohibitions create binary relocation incentives that marginal cost increases do not.

Two caveats apply. First, the trade diversion evidence is suggestive rather than causal: Poland's export surge coincided with the ban wave but also with broader structural changes in the global fur market. Future work with bilateral trade data could more precisely trace the reallocation paths. Second, the small number of country-level clusters (14 in the EU sample) limits statistical power; the significance of the main estimate should be interpreted alongside its economic magnitude.

The policy implication is nonetheless direct. The EU's classification of American mink as an Invasive Alien Species (effective 2027) will close the intra-EU leakage channel by banning mink breeding across all member states. But extra-EU leakage—to China, Turkey, and other global producers—may persist unless accompanied by border measures.

More broadly, these results illustrate a tension inherent in unilateral regulation of freely tradable products: when bans target production but not consumption, the economic logic of comparative advantage creates incentives for geographic reallocation. The extent to which this "animal welfare haven" effect undermines the welfare goals of the regulation is a question that deserves further empirical attention.

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Appendix: Standardized Effect Sizes

Acknowledgements

Table 3: Trade Diversion: Non-Banning EU Fur Producers

Year	Poland ($M)	Finland ($M)
2002	13.4	104.8
2003	18.7	122.3
2004	29.0	159.7
2005	21.9	181.4
2006	17.3	270.6
2007	38.6	190.2
2008	92.7	264.7
2009	75.6	188.1
2010	122.3	338.1
2011	133.8	391.3
2012	118.2	429.1
2013	267.0	551.7
2014	407.3	256.1
2015	378.8	374.6
2016	286.5	198.9
2017	195.3	980.6
2018	198.3	729.2
2019	178.1	273.5
2020	90.5	255.3
2021	123.1	551.3
2022	75.7	343.7

Notes: Annual mink furskin exports (HS 430110) in millions of USD. Poland and Finland are the two largest EU mink producers that have not enacted fur farming bans. Poland's exports surged from $122M in 2010 to over $400M by 2014 as neighboring countries banned fur farming, consistent with the trade diversion (animal welfare haven) hypothesis.

Table 4: Global Mink Furskin Trade: Decomposition by Country Group

Year	Ban countries ($M)	Control EU ($M)	Global ($M)	Total ($M)
2002	464	119	227	876
2005	790	205	326	1419
2008	1142	376	530	2307
2010	1410	481	605	2740
2012	2123	579	1090	4267
2014	1730	704	978	3991
2016	1085	542	999	2921
2018	1129	1025	712	3174
2019	902	535	522	2256
2020	418	385	201	1054
2021	586	762	125	1571
2022	173	482	157	871

Notes: Annual mink furskin exports (HS 430110) in millions of USD by country group. Ban countries: UK, Austria, Netherlands, Belgium, Czech Republic, Hungary, Ireland, Latvia, Lithuania, Norway, Denmark. Control EU: Finland, Poland, Greece. Global: China, USA, Canada, Russia, South Korea, Japan, Turkey. Total is the sum across all countries in the sample.

Table 5: Placebo Tests: Effect of Fur Farming Bans on Non-Fur Commodities

	Mink (HS 430110)	Bovine hides (HS 410120)	Wool (HS 510111)
Fur farming ban	-1.336**	1.939*	0.313
	(0.492)	(0.906)	(0.905)
Num.Obs.	210	272	247
R2	0.649	0.703	0.797

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

Standard errors clustered at the country level in parentheses.

All specifications use log(exports + 1) with country and year FE.

Columns (2)–(3) apply the ban indicator to non-fur commodities.

Bovine hides (HS 410120) and wool (HS 510111) serve as placebos.