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Intra-National Protectionism in China:

Evidence from the Public Disclosure of 'Illegal' Drug Advertising

by

Markus Eberhardt, Zheng Wang and Zhihong Yu

Abstract

This paper provides micro-level evidence that drug advertising regulations and inspections in China are used by local governments to discriminate against firms from outside the province. Furthermore, the degree of discrimination varies across firms in that drug manufacturers which have closer ties with rival provinces are more likely to be targeted. These findings demonstrate that giving provincial governments strong incentives to compete with each other may exacerbate the market distortions inherent in a partially reformed economy such as China.

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Non-Technical Summary

The recent trade literature has shown a growing interest in the analysis of barriers to trade within countries, especially with reference to developing economies such as China. These internal barriers to trade are typically in form of regional protectionism and some of the recent research in this area cautions that these distortions may be of similar significance to international trade barriers (tariffs; non-tariff barriers, NTBs) in affecting market efficiency.

Evidence for intra-national protectionism is hard to detect. This is because unlike international trade barriers that can be measured using tariff data or by quantifying NTBs, protection by local governments against nonlocal firms within the same country can take many different forms, is typically (in particular for practices related to rent-seeking) not explicitly announced or recorded by the authorities or anybody else. The existing empirical literature on protectionism in China therefore relies on implicit measures of protectionism at an aggregate province or industry level: in the absence of regional protectionism one would for instance expect regional specialisation in production as well as price convergence across provinces to be detectable in the data.

In this paper we provide evidence that ambiguous drug advertising regulations and selective inspections are used by local governments in China to discriminate against firms from outside the province. This is, to the best of our knowledge, the first study to provide direct, firm-level evidence for regional protectionism and market fragmentation in China, rather than relying on implicit evidence through aggregate level studies such as those mentioned above. We show that the institutional setup and role of provincial Food and Drug Administrations (FDAs) within China's political system provides scope for protectionism: under fiscal decentralisation the corporation tax revenue from 'nonlocal' firms accrues to their 'home' province, so that provincial governments (who appoint senior officials of local FDAs) have an incentive to protect local firms and to discriminate against firms from outside the province selling their pharmaceutical products. Since advertisement is crucial for these firms and drug advertisement rules are ambiguous and subject to interpretation local FDAs can selectively inspect and disclose nonlocal firms for 'illegal' advertising.

Furthermore, we show that the degree of discrimination varies across firms in that drug manufacturers which have closer ties (lishu, government affiliation) with rival provincial governments are more likely to be targeted than their local peers, thus offering insights into the patterns of discrimination and rent-seeking unavailable in previous studies.

These findings demonstrate that giving provincial governments strong incentives to compete with each other may exacerbate the market distortions inherent in a partially reformed economy such as China. Our findings arguably have wider validity beyond the pharmaceutical industry because the mechanism revealed is indicative of more generic institutional roots of regional protectionism.

1 Introduction

The analysis of barriers to trade within countries has received growing attention in the recent literature (e.g. Atkin and Donaldson, 2012; Coşar and Fajgelbaum, 2012; Ramondo *et al*., 2012). Barriers to domestic economic activities are to a large degree created by intra-national protectionism, preventing the efficient allocation of resources and attenuating the benefits of scale economies and spatial spillovers. Such protective behavior therefore not merely harms domestic market efficiency, but also offsets potential gains from a more liberal international trade policy regime.

In this paper we provide micro-level evidence for the existence and patterns of provincial protectionism in China, going beyond the existing analysis (Young, 2000; Naughton, 2003; Bai *et al*., 2004; Poncet, 2005; Holz, 2009) at the province or industry level.[1] We do so through the investigation of a unique case — the public disclosure of 'illegal' drug advertisements by provincial Food and Drug Administrations (FDAs). We show that the enforcement of ambiguous advertisement rules through selective inspection and disclosure is employed to engage in local protectionism, motivated by an institutional setup which aligns the interests of provincial governments and FDAs. A second set of results provides evidence on the impact of government affiliation of firms (*lishu*) on their propensity of being disclosed. We establish that nonlocal firms with province-level affiliation are significantly more likely to be disclosed than their local counter-parts. We conclude that giving provincial governments strong incentives to compete with each other may lead to rent-seeking behavior, echoing the conclusion drawn by Young (2000, p. 1091) that in a partially reformed economy "distortions beget distortions." Our study confirms the presence of provincial protectionism revealed by earlier studies but crucially provides first direct evidence for the specific form these barriers can take as well as the politico-economic patterns of discrimination at the firm-level.

We proceed as follows: Section 2 sets out the institutional background, Section 3 describes the data, Section 4 contains the empirical analysis, and Section 5 concludes.

2 Institutional Background

Drugs account for around half of total health spending in China (Sun *et al*., 2008), three times the share in OECD countries and twice that in other middle-income countries (Meng *et al*., 2005). Fierce domestic competition from a large number of small- and medium-sized enter-

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[1] By revealing that provinces are increasingly similar in industrial structure these studies provide evidence consistent with inter-provincial trade barriers. A recent challenge to these aggregate-level studies by Holz (2009) provides a strong case in favor of *direct* (rather than implicit) evidence for protectionism.

prizes producing generic drugs (Clark, 2007; Sun *et al.*, 2008) represents a major motivation for firms to engage in advertising (Xinhua News, 2004). Apart from the mandatory procedures required to start a business and to monitor and maintain the quality and security of production, drug producers in China are required to obtain licenses before they are able to advertise their products in any official media outlet – including TV, radio and newspapers, as well as billboards and advertisement on public transport and in taxi cabs.

This study argues that the institutional setup and role of FDAs within China's political system provides scope for provincial protectionism. Different levels of FDAs form a vertical hierarchial structure in market administration, while their activities, including the monitoring of pharmaceutical firms and their advertisement practices, are largely constrained by the horizontal links to local governments via budgetary and personnel controls: the provincial government not only determines and approves the provincial FDA's costing, but also appoints its senior officials. By taking hold of the most important human resources, the local government thus has a great influence over the organization's daily business, enabling it to impose its preferences on the actions of the local FDA.

As the governmental departments in charge of the practical regulation of drug advertisements, provincial FDAs regularly carry out investigations to spot 'illegal' advertisements and to suspend or in case of serious violation cancel advertising licenses. Local FDAs are entirely autonomous in their decision to investigate a specific advertisement or firm and to judge the advertisement as 'illegal.' In contrast to the straightforward case of unlicensed advertising, what actually constitutes an 'illegal drug advertisement' as stipulated by the State FDA's *Standards of Drug Advertisement Censorship* is quite ambiguous and clearly open to interpretation.[2] A 2004 report by China's State FDA reveals that strict application of the advertising guidelines would result in 62% of all advertisements broadcast on television and 95% of all newspaper advertisements to be classified as 'illegal' (Xinhua News, 2004).

Given this institutional setup, investigations carried out by local FDAs clearly offer room for manipulation and rent-seeking in the determination of 'illegal' advertisements. It is reasonable to suspect that FDA drug advertising investigations are biased toward protecting local firms, which under the Chinese practice of fiscal decentralization contribute directly to tax revenue for the provincial government (Qian and Roland, 1998; Cai and Treisman, 2004; Jin *et al.*, 2005). Introduced in 1994, fiscal decentralization is intended to provide incentives to provincial governments to push for local development and thus boost their primary source of tax revenue. A testable hypothesis is thus whether drug producers are more likely to be publicly disclosed for 'illegal' advertising in a province other than their 'home' province.

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[2]Perhaps the most exceptional rule stipulates that drug advertisements cannot carry any indication of a positive effect brought about by the drug.

The second focus of this study is to analyze the role of political connections in the phenomenon described above. We are interested to what extent firm affiliation with different levels of government (*lishu*, meaning 'subordinate to' or 'directly controlled by') mitigates or exacerbates the effect of provincial protectionism. It has been widely acknowledged that social networks play an important part in doing business in countries with weak legal system and contract enforcement such as China (Rauch, 2001). Of all forms of social networks, political connections are believed to be particularly important in regulated industries, such as pharmaceuticals, since regulations are administered by government bureaucrats and close ties with governments may allow firms to seek rents created by loopholes in the regulations. This may be particularly salient in the case of non-state enterprizes, for whom government institutions may impose regulatory red tape (Guriev, 2004) or extralegal fees (Johnson *et al.*, 2000). Tan *et al.* (2007) argue that the *lishu* affiliation system represents a uniquely Chinese institutional variation where the 'iron fist' of the planned economy meets the 'invisible hand' of the market. A *lishu* relationship is distinct from ownership and entails both government control as well as subsidies and support. Although government interference through *lishu* declined over time and many private firms in the 2000s opted not to enter into any formal relations, according to Xia *et al.* (2009, p. 1655) the Chinese "government never clearly or formally state[d] that non-public firms are free from *lishu*." Based on a small number of empirical studies the economic implications of *lishu* are somewhat unclear: investigating collectively-owned enterprises during the early 2000s Xia *et al.* (2009) find that abandoning *lishu* with local government enhanced firm performance, while Tan *et al.* (2007) in a study of all ownership types in the late 1990s report a nonlinear relationship whereby firm productivity declines from top (central) to lower (county-level) *lishu* affiliation but then dramatically increases for the bottom (township) category. Guariglia and Mateut (2013) find that over the 2000-2007 period higher level *lishu* affiliation is associated with better access to credit, to such an extent that political affiliation can wipe out the historical advantage of state-owned over private firms.

In our case, local firms may benefit from such affiliations in at least two ways. If a firm is 'local' to a province then political connections may enable it to persuade the local FDA to either let them off the hook when in danger of being disclosed for 'illegal' advertising, or to single out nonlocal competitors by using a deliberately broader interpretation of the regulations. Alternatively, if such political connections carry across provincial borders then nonlocal firms with higher affiliations may be able to escape selective disclosure. In our empirical analysis we investigate the impact of firms' self-reported affiliation with central, provincial or lower level government.[3] In view of the hierarchical governmental structure in China and the heterogeneous political connections via affiliation, our conjecture is that a connection with the provincial or central government would protect a firm from being disclosed in their 'home' province.

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[3]The reference group is firms with no affiliation. We also consider an alternative grouping following (Guariglia and Mateut, 2013), see Table A6 in the Appendix.

Nonlocal affiliated firms are argued to be targeted disproportionally, motivated by the intense competition among regions, linked to the practice of political promotions being based on local economic performance (Chen *et al.*, 2005; Li and Zhou, 2005). A second testable hypothesis is thus whether drug producers with higher-level affiliation are more likely to be publicly disclosed for 'illegal' advertising in a province other than their 'home' province.

3 Data

The data on the disclosed 'illegal' drug advertisements (ADVERTS) for 2001-2005 are from the Chinese State FDA.[4] This source offers details on all firms whose advertisements (in different media outlets and/or provinces) were found to be 'illegal' by provincial FDAs on at least five occasions. For each illegal advertisement, the information provided includes the name of the company and product, the media outlet, the dates of illegal advertising, the primary reason for 'illegality,' and the reporting provincial FDA.

Our second source of data is the Annual Survey of Industrial Enterprizes (ASIE) from China's National Bureau of Statistics used in a number of recent studies on China (e.g. Cai and Liu, 2009; Hsieh and Klenow, 2009; Brandt *et al.*, 2012). The survey includes all state-owned firms and firms of other ownership types with annual sales above 5 million Chinese yuan (around US\$600,000 in 2000 values). On average, more than 200,000 manufacturing firms are included each year, and these account for around 95% of total Chinese industrial output. For the purpose of our analysis we restrict the sample to ASIE firms whose primary industry of operation is reported as the pharmaceutical industry, amounting to 20,906 observations from 7,883 firms for our period of analysis.

We match the annualized ADVERTS data with information from ASIE. Table A1 in the Appendix presents details of the sample and match. About 8% of all pharmaceutical firms in the ASIE data can be matched to the ADVERTS information, constituting the firms which were disclosed as having advertised 'illegally.' Unmatched firms in ASIE comprise (a) firms which did not advertise, and (b) firms which did advertise but were not disclosed. Unmatched firms in ADVERTS represent (a) disclosed firms which were retailers, or (b) private firms which were too small to be included in ASIE.

We cannot assume that all firms advertise in all provinces and for our regression analysis we therefore rely on official information about advertisement licenses issued each year, taken from provincial FDA newsletters. These data are only available in three provinces, namely

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[4]Criteria for public disclosure changed in 2006, when only cases of the (subjectively) most serious violations of advertising regulations were publicized.

Jiangsu, Zhejiang and Inner Mongolia, amounting to 2,906 observations from 569 firms. The former two represent provinces with the largest number of pharmaceutical firms in the country and fare among the most developed regions in the country. Inner Mongolia on the other hand is a peripheral province characterized by mining and livestock breeding.[5]

4 Empirical Analysis

4.1 Descriptive Results

We start by investigating descriptive patterns across all provinces. Table A2 in the Appendix reports the number of matched firms by disclosure 'type.' Summed over time, there are less than 40 firms which were only disclosed by their home province's FDA, accounting for less than 4% of the total 1,059 disclosures. If we include firms which were disclosed both at home and elsewhere this proportion rises to 12%.

These patterns should naturally be interpreted with caution. Firstly, the results could simply be driven by the fact that there are 30 other (nonlocal) provinces for each firm, which raises the relative likelihood of nonlocal disclosure. Secondly, there may be regional differences in the incentives for local FDAs to disclose nonlocal firms: for provinces with a more sizeable pharmaceutical sector (and thus more tax revenue), local FDAs are more likely to take discriminatory action in illegal advertising investigations to protect local producers, whilst for provinces with a small pharmaceutical industry the incentive to do so is much weaker. In Table 1 we address these issues by analyzing the proportion of local firms in all disclosed firms alongside the number of local pharmaceutical firms as a share of the total firm count in the country (employment share is also presented as a robustness check). The table indicates that most, if not all, firms disclosed are nonlocal, with the ratio of local producers in all disclosed firms ranging from 0 to 13.3%. Averaged across all provinces, the proportion of local producers in disclosed firms is 3.3%. Next we compare the proportion of a province's local producers in disclosed firms against the proportion of its local pharmaceutical firms in the whole country. We find that in 19 out of 31 provinces, the first proportion is lower than the second. For the seven provinces with the largest number of pharmaceutical firms, which account for over 45% of firms in the country, the first proportions are all substantially smaller than the second.

The above relationship is visualized in Figure 1 with the vertical axis representing the proportion of local producers in all disclosed firms and the horizontal axis the provincial propor-

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[5]Our regression results for discrimination of nonlocal firms are robust to the exclusion of Inner Mongolia, while patterns for the impact of government affiliation are similar albeit less precisely estimated (see Table A5 in the Appendix).

tional industry size. We find that most of the provinces lie *below* the 45° line, indicating a reduced probability of disclosing local firms even when conditioning on the relative size of the province's pharmaceutical industry. A fitted regression line obtains a coefficient of 0.32, statistically significantly different from 1 at the 5% level.

So far our analysis assumes that all firms advertise in all provinces, clearly a very strong assumption. For the remainder of this paper we take the information on advertising licenses into account and restrict our sample to the three provinces for which we hold this information. Table 2 provides details on the patterns of disclosure.[6] Firstly, it is notable that over our sample period only a single unlicensed local firm was disclosed. This suggests that provincial FDAs may have turned a blind eye on unlicensed local advertisers and thus discriminated against non-local firms. Secondly, among licensed firms, nonlocal firms are far more likely to be disclosed than local firms. In all three provinces around 11% of nonlocal firms (243 out of 2,178) were disclosed, in contrast to a mere 1% (10 out of 728) of local firms.

4.2 Regression Results

The core of our empirical evidence is made up of a number of linear probability models, results for which are presented in Table 3.[7] We restrict the sample to licensed firms in the three provinces since the deliberate targeting of *unlicensed* nonlocal firms cannot be verified in the data. All models presented contain year and firm ownership dummies,[8] standard errors are clustered at the firm-level. Our baseline model (1) shows that the probability of being disclosed is 10 percentage points higher for nonlocal than for local firms. Including lagged firm sales (in logs) as a proxy for firm size in Model (2) we find that smaller firms are more likely to be disclosed, while evidence for discrimination against nonlocal firms is now somewhat stronger. The revealed discrimination effect is even more pronounced when we include province dummies in Model (3) to control for unobserved province-specific effects. We then add a dummy variable indicating whether a firm has previously been disclosed in the same province: once a firm has been disclosed it will be more likely to be targeted and disclosed again in later years (around 8% of firms in this sample have prior history of disclosure). The results for Model (4) suggest that the discrimination effect is around 9%, and that the history of disclosure accounts for a 30 percentage-point increase in the probability of further disclosure.

Next, we test the impact of government affiliation on the propensity of disclosure. We rerun the regressions for Models (1) to (4) but include government affiliation dummies and interaction terms with the 'nonlocal' indicator. Model (5) suggests that government affiliation

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[6]Table A4 in the Appendix contains descriptive statistics.

[7]Average marginal effects from probit regressions provide similar patterns (not reported).

[8]We generally find that foreign-invested (non-HMT) firms are significantly less likely to be disclosed than other ownership types.

has a monotonic relationship with disclosure probability, with the highest level affiliation firms 9% more likely to be disclosed than an unaffiliated firm – however the estimates are imprecise and only province-level affiliation is statistically significant. When we introduce the interaction effects we find (although again estimated imprecisely) nonlocal firms with provincial-level affiliation appear more likely to be disclosed than their local peers. Controlling for lagged sales, province fixed effects and previous disclosure this effect is statistically significant at the 10% level.[9] The interpretation of this finding is that the potential benefit accruing from provincial affiliation does *not* travel across provincial borders, and on the contrary seems to make affiliated firms a preferred target for disclosure. Results for affiliation with the central government are less precise, most likely due to the small number of firms in the 'local' category – see Table A3 in the Appendix. The patterns in Models (5) to (9) however may suggest that these firms are always targeted, whether local or not. Targeting of firms affiliated with central or rival provincial governments is in line with the argument developed above, namely that provincial FDAs selectively disclose firms whose fiscal contribution does not accrue to the local province. The effect of this practice is quantitatively substantive: for nonlocal firms affiliated to provincial governments the probability of disclosure is between 5 and 11 percentage points higher, thus up to twice that for nonlocal firms without any affiliation.[10]

5   Conclusions

This study offers direct micro-level evidence for the existence and patterns of regional protectionism in China. We show that drug advertising regulations and inspections are used as a protectionist tool by provincial administrations to shelter local firms from extra-provincial competition. Furthermore, nonlocal firms are not disclosed indiscriminately: those affiliated with provincial governments are significantly more likely to be exposed as 'illegal' advertisers, consistent with theories on the politico-economic competition among Chinese provinces. Our findings arguably have wider validity beyond the pharmaceutical industry because the mechanism revealed is indicative of more generic institutional roots of regional protectionism. Our study suffers from the caveat that firm sales are not available at the province level, so that while we can provide evidence for discrimination we cannot quantify the detrimental economic effect this is likely to have on firms.

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[9]We also tested whether provincial affiliation merely proxies for higher productivity: the introduction of lagged labour productivity did not qualitatively change our results (not reported).

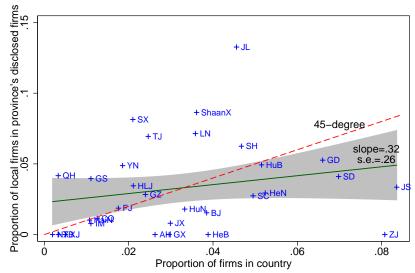[10]With regard to the debate over increasing as opposed to ("[i]f anything") decreasing internal barriers to trade (Young, 2000; Holz, 2009, p. 616), results for our regression models augmented with time-varying 'nonlocal' indicators (Table A7 in the Appendix) suggest statistically significantly higher discrimination in the later years of our (comparatively short) panel.

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Figure and Tables

Note: The '+' signs represent provinces, the solid line represents the fitted line from an OLS regression, the dashed line is the 45–dgree diagonal, and the shaded area indicates 90% confidence intervals of the OLS regression.

FIG 1. PROPORTIONS OF LOCAL FIRMS DISCLOSED − ALL PROVINCES

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TABLE 1. NUMBERS OF LOCAL AND NONLOCAL FIRMS DISCLOSED FOR 'ILLEGAL' ADVERTISING – ALL PROVINCES (2001-2005)

Province	[1]			[2]	[3]	[4]	[5]
	Local	Non-local	All	% local firms in disclosed	% province's firms in country	% province's employment in country	Difference [2]-[3]
Ningxia	0	28	28	0.00	0.20	0.28	-0.20
Qinghai	2	46	48	4.17	0.33	0.29	3.84
Tibet	0	5	5	0.00	0.34	0.13	-0.34
Xinjiang	0	83	83	0.00	0.50	0.26	-0.50
Hainan	1	97	98	1.02	1.07	0.51	-0.05
Gansu	4	97	101	3.96	1.10	1.03	2.86
♮ Inner Mongolia	1	128	129	0.78	1.10	1.15	-0.33
Chongqing	1	86	87	1.15	1.25	1.91	-0.10
Fujian	2	105	107	1.87	1.76	1.55	0.11
Yunnan	4	78	82	4.88	1.86	1.39	3.02
Shanxi	7	79	86	8.14	2.10	2.14	6.04
Heilongjiang	5	140	145	3.45	2.11	3.85	1.34
Guizhou	3	103	106	2.83	2.40	1.66	0.43
Tianjin	5	67	72	6.94	2.46	3.36	4.48
Anhui	0	135	135	0.00	2.63	2.38	-2.63
Guangxi	0	93	93	0.00	2.96	2.59	-2.96
Jiangxi	1	124	125	0.80	2.99	3.48	-2.19
Hunan	2	109	111	1.80	3.33	2.29	-1.53
Liaoning	8	104	112	7.14	3.58	3.09	3.56
Shaanxi	7	74	81	8.64	3.61	3.09	5.03
Beijing	1	64	65	1.54	3.85	3.08	-2.31
Hebei	0	103	103	0.00	3.88	6.43	-3.88
Jilin	13	85	98	13.27	4.56	3.83	8.71
Shanghai	4	60	64	6.25	4.67	4.50	1.58
Sichuan	4	142	146	2.74	4.95	4.80	-2.21
Hubei	7	135	142	4.93	5.15	5.39	-0.22
Henan	2	66	68	2.94	5.24	6.26	-2.30
Guangdong	5	90	95	5.26	6.60	6.13	-1.34
Shandong	8	187	195	4.10	6.98	8.52	-2.88
♮ Zhejiang	0	134	134	0.00	8.07	6.87	-8.07
♮ Jiangsu	6	173	179	3.35	8.36	7.75	-5.00

Note. Provinces are ordered by their proportions of pharmaceutical firms in the country.
♮ indicates the three provinces contained in our regression sample.

TABLE 2. NUMBERS OF LICENSED AND UNLICENSED FIRMS DISCLOSED IN THE THREE PROVINCES OF JIANGSU, ZHEJIANG, AND INNER MONGOLIA

	Jiangsu disclosed				Jiangsu undisclosed	
	Licensed		Unlicensed		Licensed	
Year	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local
2001	0	0	6	0	68	65
2002	9	0	28	0	66	71
2003	9	2	24	0	79	75
2004	26	5	58	0	81	99
2005	15	2	66	1	85	102
Totals	59	9	182	1	379	412

	Zhejiang disclosed				Zhejiang undisclosed	
	Licensed		Unlicensed		Licensed	
Year	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local
2001	1	0	7	0	169	40
2002	13	0	16	0	178	40
2003	16	0	10	0	208	41
2004	19	0	14	0	220	47
2005	31	0	40	0	213	44
Totals	80	0	87	0	988	212

	Inner Mongolia disclosed				Inner Mongolia undisclosed	
	Licensed		Unlicensed		Licensed	
Year	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local
2001	3	0	14	0	91	14
2002	6	0	15	0	105	14
2003	23	0	18	0	110	18
2004	34	1	18	0	135	23
2005	38	0	12	0	127	25
Totals	104	1	77	0	568	94

	Three Provinces disclosed				Three Provinces undisclosed	
	Licensed		Unlicensed		Licensed	
	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local
Totals	243	10	346	1	1,935	718

Note. Our regression sample is made up of all licensed firms, comprising 2,906.

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TABLE 3. PROBABILITY OF BEING DISCLOSED IN THE THREE-PROVINCE SAMPLE

	Dependent variable: indicator of a firm being disclosed in province i in year t								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nonlocal	0.101 (0.011)***	0.120 (0.015)***	0.127 (0.017)***	0.088 (0.012)***	0.094 (0.011)***	0.092 (0.025)***	0.090 (0.028)***	0.092 (0.030)***	0.065 (0.025)**
Lagged log sales		-0.014 (0.007)**	-0.013 (0.007)*	-0.015 (0.005)***			-0.017 (0.007)**	-0.016 (0.007)**	-0.017 (0.006)***
Disclosed before				0.296 (0.044)***					0.291 (0.042)***
Lower_aff					0.026 (0.019)	0.027 (0.011)**	0.024 (0.015)	0.018 (0.017)	0.011 (0.013)
Province_aff					0.065 (0.039)*	0.021 (0.016)	0.026 (0.023)	-0.001 (0.025)	-0.001 (0.019)
Central_aff					0.086 (0.062)	0.080 (0.039)**	0.083 (0.054)	0.088 (0.056)	0.052 (0.044)
Nonlocal×Lower_aff						-0.001 (0.029)	0.015 (0.033)	0.020 (0.034)	0.012 (0.028)
Nonlocal×Province_aff						0.047 (0.046)	0.079 (0.053)	0.106 (0.055)*	0.076 (0.043)*
Nonlocal×Central_aff						0.008 (0.078)	0.045 (0.092)	0.040 (0.092)	0.064 (0.077)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies	No	No	Yes	Yes	No	No	No	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,906	2,140	2,140	2,140	2,906	2,906	2,140	2,140	2,140
adj. R^2	0.047	0.044	0.054	0.133	0.051	0.050	0.050	0.060	0.136

Note. This table reports regression results of the linear probability models on the determinants of disclosure in 'illegal' drug advertising inspections for the sample of firms which held advertising licenses in Jiangsu, Zhejiang, and/or Inner Mongolia. The dependent variable takes on the value of one if a firm is disclosed during the calendar year and zero otherwise. 'Nonlocal' is the dummy for being nonlocal to the province where the firm advertises. 'Lagged log sales' is the one-year-lagged value of the firm's log total sales. 'Disclosed before' is the indicator for the firm having been disclosed in the province before. 'Central_aff', 'Province_ aff', and 'Lower_aff' are dummies for affiliation with the central, provincial, and lower levels of government respectively, with the reference group being no government affiliation. 'Province dummies' refer to the provinces for which firms held advertisement licenses (not the home province of the firm). Standard errors (in parentheses) are clustered at the firm-level. 'Ownership dummies' are defined as private (omitted base), state-owned, Hong Kong/Macao/Taiwan (HMT) and other foreign firms. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively.

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Appendix

TABLE A1. NUMBERS OF FIRMS

Year	ASIE	ADVERTS	Matched ASIE-ADVERTS
2001	3,486	175	137
2002	3,680	449	316
2003	4,062	221	162
2004	4,709	214	174
2005	4,969	328	270
Total	7,883	796	653

TABLE A2. NUMBERS OF FIRMS BY DISCLOSURE TYPE IN THE SAMPLE OF 31 PROVINCES

Year	Undisclosed firms	Disclosed firms only in home province	only in other provinces	in home and other provinces	Total
2001	3,349	0	135	2	3,486
2002	3,364	23	283	10	3,680
2003	3,900	3	145	14	4,062
2004	4,535	4	145	25	4,709
2005	4,699	7	227	36	4,969
Total	7,770	35	606	68	7,883

Note. We report the number of firms in all rows. Repeated disclosure for illegal advertising accounts for the discrepancy between the totals and column sums for disclosed firms, the unbalanced nature of the panel for the same discrepancy in the undisclosed firms.

TABLE A3. NUMBERS OF FIRMS BY DISCLOSURE AND AFFILIATION TYPE
IN THE THREE-PROVINCE SAMPLE

Nonlocal	Government affiliation None	Lower	Province	Central	Total
0	101	523	28	10	662
1	250	1,495	449	50	2,244
Total	351	2,018	477	60	2,906
Reduced sample					
0	59	401	22	8	490
1	162	1,110	338	40	1,650
Total	221	1,511	360	48	2,140

Note. We report the number of firms in all rows. 'Reduced sample' indicates the statistics for the model in Table 3 columns (2)-(4) and (6)-(9) where lagged sales value is included.

TABLE A4. DESCRIPTIVE STATISTICS

Variable	Full sample			Three-province sample		
	Mean	SD	N	Mean	SD	N
Firm size:						
Log sales	9.96	1.44	20,489	10.82	1.47	2,206
Lagged log sales	10.07	1.37	12,526	10.85	1.44	1,622
Log employment	4.90	1.10	20,715	5.58	0.99	2,210
Affiliation type:						
Affiliation to central government			377			40
Affiliation to provincial government			1,865			345
Other affiliation types			18,664			1,830
License type:						
Licensed for advertising in Jiangsu						859
Licensed for advertising in Zhejiang						1,280
Licensed for advertising in Inner Mongolia						767
Disclosure type:						
Not disclosed			19,847			2,017
Disclosed in local province			37			10
Disclosed in nonlocal province			935			188
Disclosed in both local and nonlocal province			87			0
Disclosed in any province before			1,090			166

Note. This table presents summary statistics of the full sample and the three-province sample (Jiangsu, Zhejiang, and Inner Mongolia). 'Mean,' 'SD,' and 'N' indicate mean value, standard deviation, and number of observations.

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TABLE A5. PROBABILITY OF BEING DISCLOSED IN THE TWO-PROVINCE SAMPLE

	Dependent variable: indicator of a firm being disclosed in province i in year t								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nonlocal	0.082 (0.012)***	0.099 (0.015)***	0.118 (0.018)***	0.083 (0.013)***	0.076 (0.011)***	0.093 (0.028)***	0.085 (0.030)***	0.098 (0.032)***	0.064 (0.028)**
Lagged log sales		-0.013 (0.006)**	-0.014 (0.006)**	-0.014 (0.005)***		-0.015 (0.007)**	-0.015 (0.007)**	-0.017 (0.007)**	-0.015 (0.005)***
Disclosed before				0.276 (0.052)***					0.272 (0.050)***
Lower_aff					0.009 (0.020)	0.023 (0.012)*	0.022 (0.016)	0.017 (0.018)	0.011 (0.013)
Province_aff					0.041 (0.037)	0.015 (0.016)	0.022 (0.024)	-0.003 (0.027)	-0.003 (0.021)
Central_aff					0.010 (0.053)	0.045 (0.042)	0.049 (0.058)	0.057 (0.059)	0.030 (0.048)
Nonlocal×Lower_aff						-0.021 (0.031)	0.001 (0.035)	0.006 (0.036)	0.010 (0.031)
Nonlocal×Province_aff						0.023 (0.044)	0.059 (0.051)	0.085 (0.054)	0.067 (0.043)
Nonlocal×Central_aff						-0.048 (0.079)	-0.016 (0.095)	-0.023 (0.099)	0.023 (0.085)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies	No	No	Yes	Yes	No	No	No	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2139	1586	1586	1586	2139	2139	1586	1586	1586
adj. R^2	0.043	0.040	0.049	0.121	0.044	0.043	0.043	0.052	0.122

Note. This table reports regression results of the linear probability models on the determinants of disclosure in 'illegal' drug advertising inspections for the sample of firms which held advertising licenses in Jiangsu and/or Zhejiang. The dependent variable takes on the value of one if a firm is disclosed during the calendar year and zero otherwise. 'Nonlocal' is the dummy for being nonlocal to the province where the firm advertises. 'Lagged log sales' is the one-year-lagged value of the firm's log total sales. 'Disclosed before' is the indicator for the firm having been disclosed in the province before. 'Central_aff', 'Province_aff', and 'Lower_aff' are dummies for affiliation with the central, provincial, and lower levels of government respectively, with the reference group being no government affiliation. Standard errors (in parentheses) are clustered at the firm-level. ***, **, and * indicate significance at the 1%, 5% and 10% levels respectively.

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TABLE A6. PROBABILITY OF BEING DISCLOSED IN THE THREE-PROVINCE SAMPLE DISTINGUISHING 'HIGH' AND 'LOW' LEVELS OF GOVERNMENT AFFILIATION

	Dependent variable: indicator of a firm being disclosed in province i in year t				
	(5)'	(6)'	(7)'	(8)'	(9)'
Nonlocal	0.093 (0.011)***	0.092 (0.025)***	0.090 (0.028)***	0.092 (0.030)***	0.065 (0.025)**
Lagged log sales			-0.017 (0.007)**	-0.016 (0.007)**	-0.017 (0.006)***
Disclosed before					0.290 (0.042)***
Lower_aff	0.026 (0.019)	0.027 (0.011)**	0.024 (0.015)	0.018 (0.017)	0.011 (0.013)
Province/Central_aff	0.067 (0.037)*	0.035 (0.020)*	0.039 (0.027)	0.020 (0.030)	0.012 (0.023)
Nonlocal×Lower_aff		-0.001 (0.029)	0.015 (0.033)	0.020 (0.034)	0.012 (0.028)
Nonlocal×Province/Central_aff		0.035 (0.041)	0.067 (0.047)	0.087 (0.049)*	0.067 (0.039)*
Year dummies	Yes	Yes	Yes	Yes	Yes
Province dummies	No	No	No	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes
N	2,906	2,906	2,140	2,140	2,140
adj. R^2	0.051	0.050	0.051	0.061	0.137

Note. We present results from a robustness check where the two higher-level affiliations (provincial, central government) are grouped together, replicating the models in columns (5) to (9) of Table 3 in the main text. See the footnote of that table for further definitions and details.

TABLE A7. PROBABILITY OF BEING DISCLOSED IN THE THREE-PROVINCE SAMPLE
(TIME-VARYING NONLOCAL DUMMY)

	Dependent variable: indicator of a firm being disclosed in province i in year t								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nonlocal (in base year)	0.013 [0.006]**	0.084 [0.018]***	0.090 [0.020]***	0.084 [0.019]***	0.005 [0.010]	0.013 [0.027]	0.042 [0.031]	0.042 [0.033]	0.057 [0.030]*
Nonlocal×2002	0.059 [0.016]***				0.060 [0.016]***				
Nonlocal×2003	0.085 [0.018]***	0.006 [0.019]	0.007 [0.019]	-0.014 [0.022]	0.087 [0.019]***	0.056 [0.017]***	0.007 [0.019]	0.008 [0.019]	-0.012 [0.022]
Nonlocal×2004	0.120 [0.023]***	0.061 [0.027]**	0.062 [0.027]**	0.025 [0.028]	0.120 [0.023]***	0.092 [0.023]***	0.064 [0.027]**	0.064 [0.027]**	0.027 [0.028]
Nonlocal×2005	0.140 [0.021]***	0.062 [0.024]***	0.064 [0.024]***	0.005 [0.025]	0.140 [0.021]***	0.112 [0.021]***	0.067 [0.024]***	0.070 [0.024]***	0.009 [0.025]
2002	0.002 [0.001]*				0.002 [0.001]				
2003	0.009 [0.008]	0.014 [0.009]	0.013 [0.009]	0.013 [0.009]	0.010 [0.008]	0.009 [0.008]	0.015 [0.009]*	0.014 [0.009]	0.014 [0.009]
2004	0.022 [0.011]**	0.022 [0.012]*	0.020 [0.012]*	0.018 [0.011]*	0.026 [0.012]**	0.022 [0.012]*	0.024 [0.012]*	0.022 [0.012]*	0.019 [0.011]*
2005	0.009 [0.007]	0.012 [0.007]*	0.007 [0.007]	0.003 [0.006]	0.014 [0.008]*	0.010 [0.008]	0.014 [0.008]*	0.008 [0.008]	0.005 [0.006]
Lagged log sales	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Disclosed before	No	No	No	Yes	No	No	No	No	Yes
Affiliation	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Nonlocal×Affiliation	No	No	No	No	No	Yes	Yes	Yes	Yes
Province dummies	No	No	Yes	Yes	No	No	No	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,906	2,140	2,140	2,140	2,906	2,906	2,140	2,140	2,140
adj. R^2	0.051	0.045	0.055	0.133	0.054	0.052	0.050	0.061	0.136

Note. This table complements the results presented in Table 3 in the main section of the paper and focuses on the nonlocal indicator interacted with a set of year dummies. Otherwise the models are identical with those in said table. 'Base year' is 2001 for Models (1) and (5), 2002 for all other models. The interactions should be interpreted as deviations from the base year coefficient on nonlocal. Arguably Model (3) is most appropriate for the Young (2000) vs Holz (2009) question (neither government affiliation nor history of disclosure are relevant for the overall dynamics of discrimination), which suggests that there is evidence for statistically significantly higher levels of protectionism in the later years. Caveat: only four years of data.