Corruption, Government Subsidies, and Innovation: Evidence from China

Internet Appendix

Lily Fang, Josh Lerner, Chaopeng Wu, and Qi Zhang[1]

September 17, 2018

[1] INSEAD; Harvard University and NBER; Xiamen University; Xiamen University. Please see the main paper for acknowledgements and disclosures.

List of Figures and Tables

The following figures and tables provide basic robustness checks:

- Figure IA1. Parallel trends assumptions for major firm-level variables around the anti-corruption campaign

- Figure IA2. Parallel trends assumptions for major firm-level variables around government official departures

- Table IA1. Analyses of government official departures

- Table IA2. R&D subsidies before and after the anti-corruption campaign: Adding a linear time trend

- Table IA3. R&D subsidies around government official departures: Adding year fixed effects and a linear time trend

The following four tables provide robustness checks using un-scaled subsidy amounts (measured in million RMB):

- Table IA4. Difference-in-differences analysis: Subsidies (million RMB) before and after the anti-corruption campaign
-
- Table IA5. R&D subsidies (Million RMB) before and after the anti-corruption campaign: Panel regressions

- Table IA6. Difference-in-differences analysis: Subsidies (million RMB) around government official departures

- Table IA7. R&D subsidies (million RMB) around government official departures: Panel regressions

The following five tables provide robustness checks using Patents/Sales as an alternative R&D efficiency measure:

- Table IA8. Difference-in-differences analysis: Subsidies before and after the anti-corruption campaign, using Patents/Sales as an alternative R&D efficiency measure

- Table IA9. R&D subsidies before and after the anti-corruption campaign: Panel regressions, using Patents/Sales as an alternative R&D efficiency measure

- Table IA10. Difference-in-differences analysis: Subsidies around government official departures, using Patents/Sales as an alternative R&D efficiency measure

- Table IA11. R&D subsidies around government official departures: Panel regressions using Patents/Sales as an alternative R&D efficiency measure

- Table IA12. Placebo tests using Patents/Sales as an alternative R&D efficiency measure

The following two tables use alternative patent measures (un-scaled, or scaled by assets) as future innovation outcomes:

- Table IA13. Subsidies and future innovation before and after the anti-corruption campaign: Alternative patent measures

- Table IA14. Subsidies and future innovation around government official departures: Alternative patent measures

The following two tables use Chinese patent data to measure future innovation:

- Table IA15. Subsidies and future innovation: before and after the anti-corruption campaign, using Chinese patent data to measure future innovation

- Table IA16. Subsidies and future innovation: around government official departures, using Chinese patent data to measure future innovation

The follow four tables repeat the main results by breaking down the funding source into those strongly or weakly related to innovation:

- Table IA17. Subsidies before and after the anti-corruption campaign, by funding source

- Table IA18. Subsidies before and after government official departures, by funding source

- Table IA19. Subsidies and future innovation: before and after the anti-corruption campaign, by funding source

- Table IA20. Subsidies and future innovation: around government official departures, by funding source

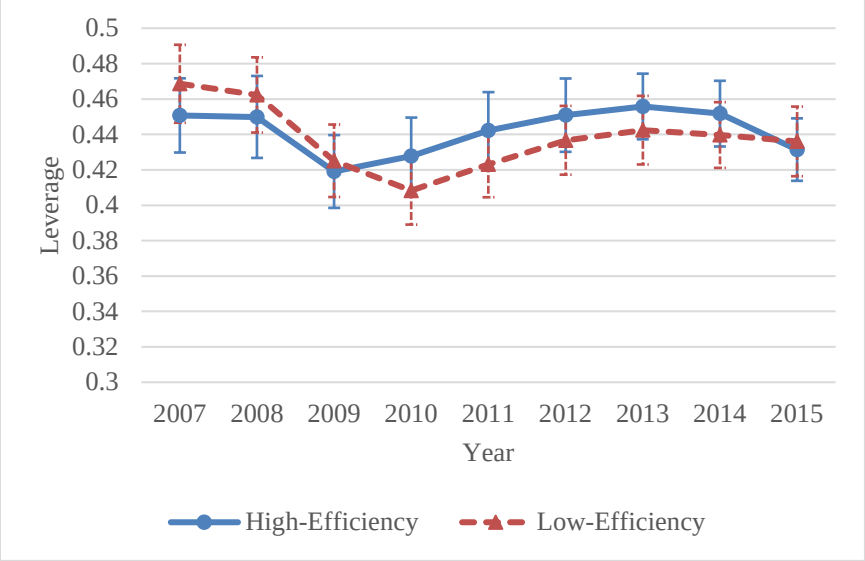
Additional analyses:

- Table IA21. Subsidies and government official departures, by departure type

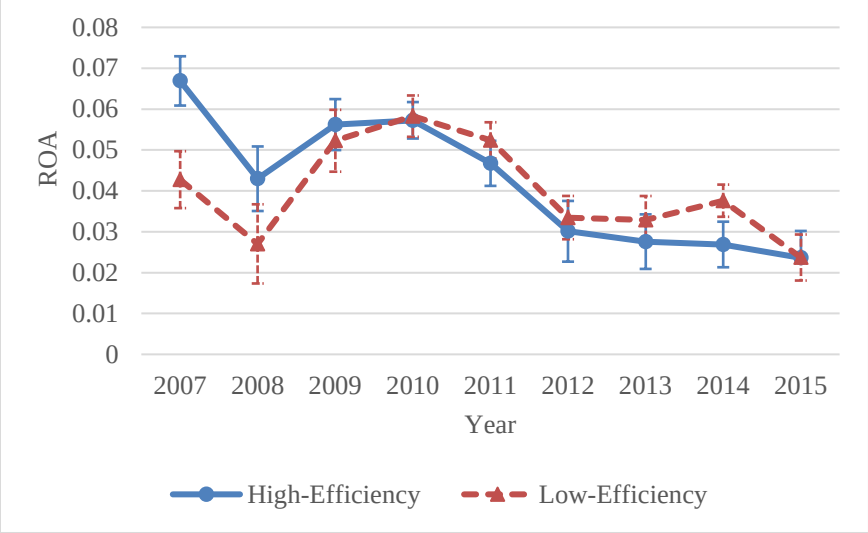
Figure IA1. Parallel trends assumptions for major firm-level variables around the anti-corruption campaign

This figure shows the evolution of firm-level variables—leverage, ROA, Tobin's Q—before and after the anti-corruption campaign. Figures A1-A3 are based on sorting firms by R&D efficiency. Figures B1-B3 are based on sorting firms by AETC. All variable definitions can be found in Appendix 1 of the paper.

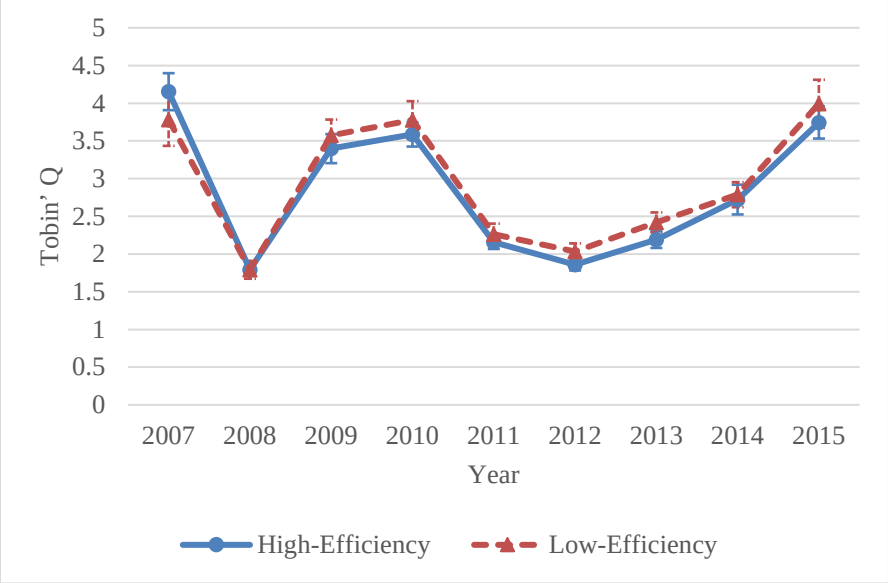
A1. Leverage before and after the anti-corruption campaign – Sorting by R&D efficiency



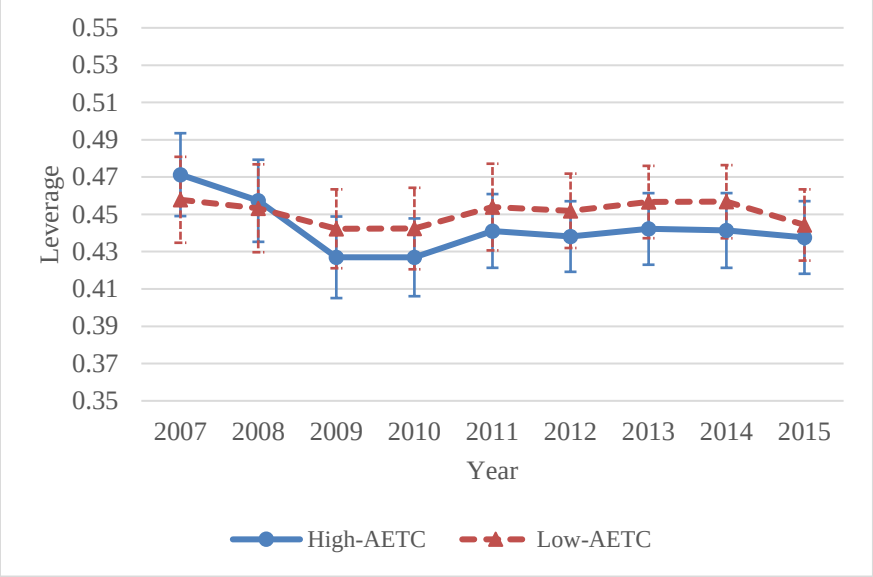
A2. ROA before and after the anti-corruption campaign – Sorting by R&D efficiency



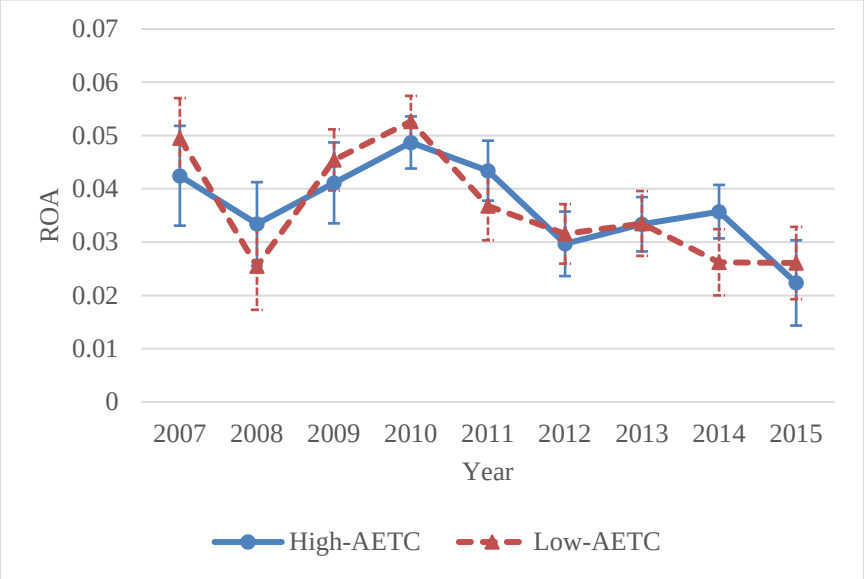
A3. Tobin's Q before and after the anti-corruption campaign – Sorting by R&D efficiency



B1. Leverage before and after the anti-corruption campaign – Sorting by AETC



B2. ROA before and after the anti-corruption campaign – Sorting by AETC



B3. Tobin's Q before and after the anti-corruption campaign – Sorting by AETC

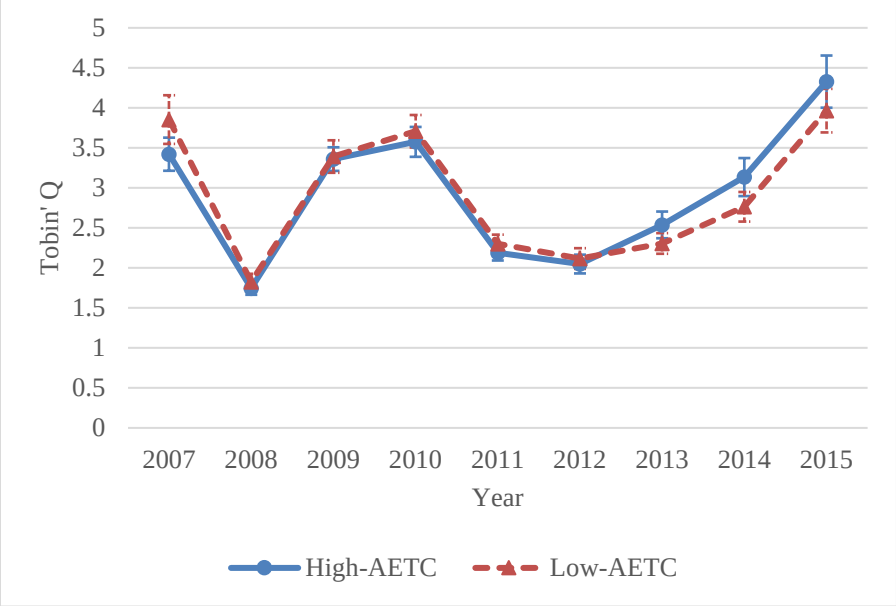
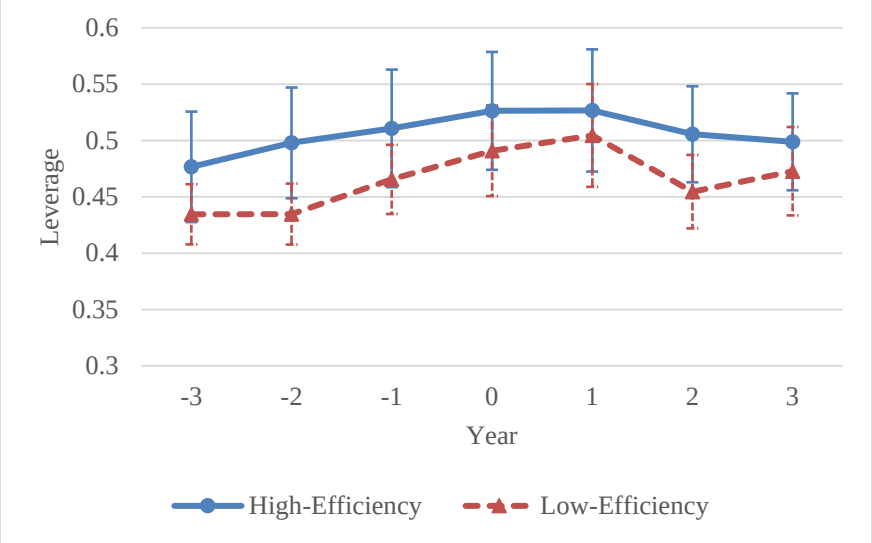


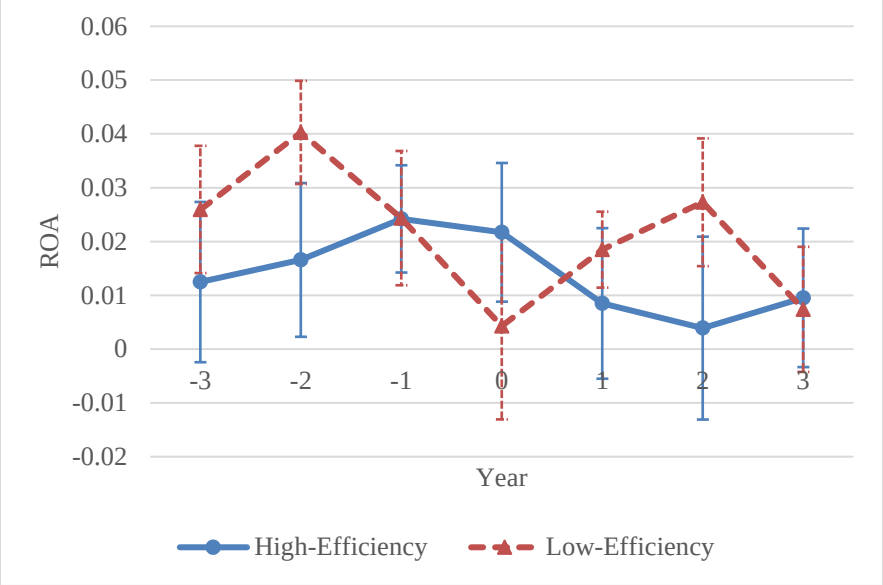
Figure IA2. Parallel trends assumptions for major firm-level variables around government official departures

This figure shows the evolution of firm-level variables—leverage, ROA, Tobin's Q—before and after the departures of provincial technology bureau heads. Figures A1-A3 are based on sorting firms by R&D efficiency. Figures B1-B3 are based on sorting firms by AETC. All variable definitions can be found in Appendix 1 of the paper.

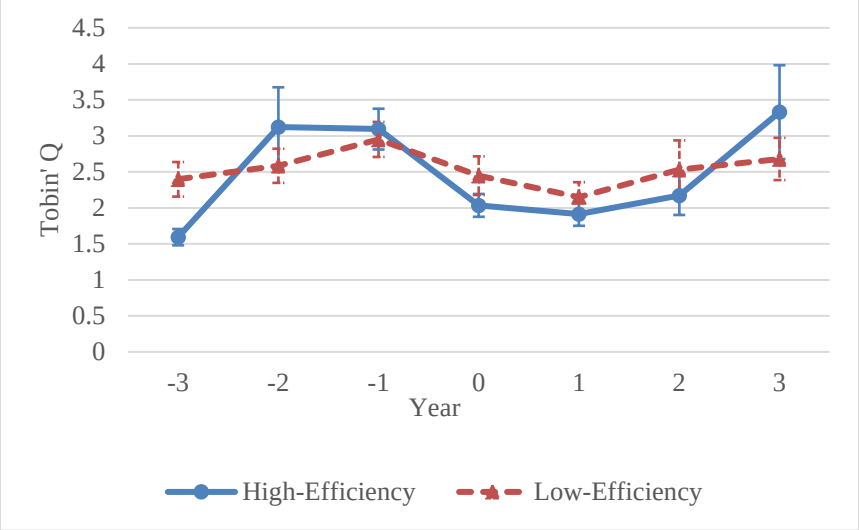
A1. Leverage before and after official departures – Sorting by R&D efficiency



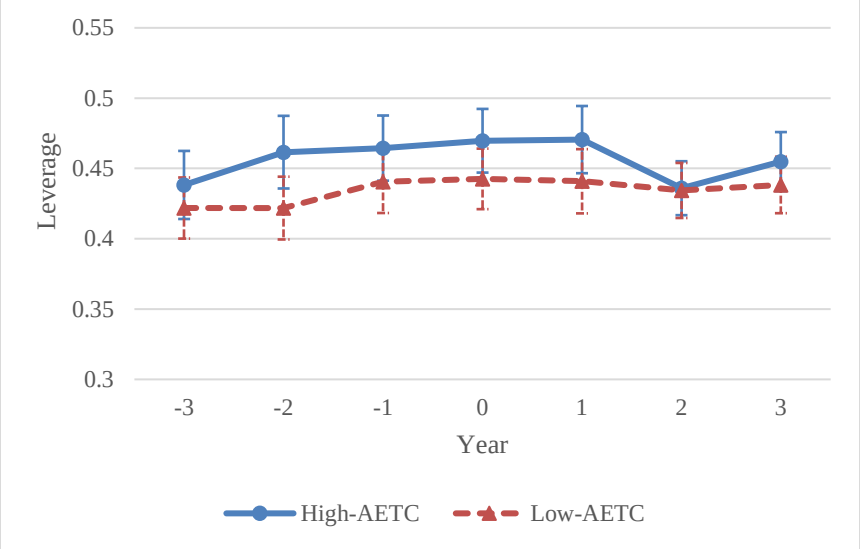
A2. ROA before and after official departures – Sorting by R&D efficiency



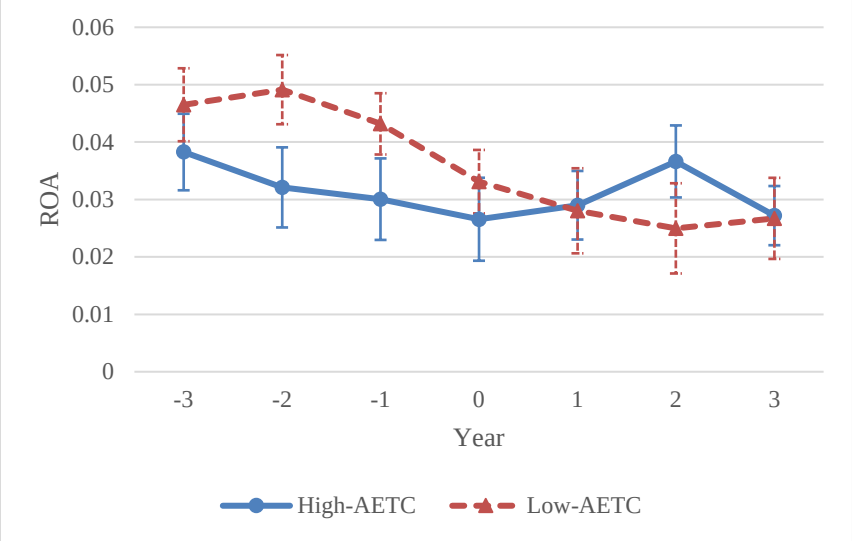
A3. Tobin’ Q before and after official departures – Sorting by R&D efficiency



B1. Leverage before and after official departures – Sorting by AETC



B2. ROA before and after official departures – Sorting by AETC



B3. Tobin's Q before and after official departures – Sorting by AETC

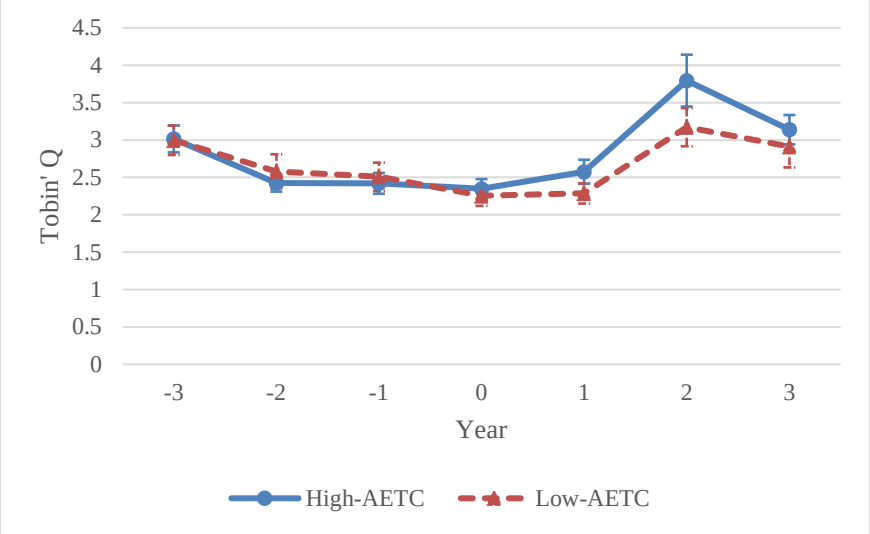


Table IA1. Analysis of government official departures

This table presents statistics and regression results that examine the relationship between the departures of provincial technology bureau heads and local business conditions. In Panel A, we compare provincial economic indicators between provincial-years with official departure and provincial-years without official departures. In Panel B, we report probit regression results when the official departure indicator is regressed on the previous year's provincial GDP growth rate. Detailed variable definitions are found in the Appendix 1 of the paper. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Comparison of provincial economic indicators

	With Departure	Without Departure	Difference	t-stat
GDP per capital (RMB)	38041	40536	-2494.7	-0.762
Unemployment rate (%)	3.482	3.366	0.016	0.171
Fiscal revenue (million RMB)	1774	1791	-16.65	-0.069
Fiscal expenditure (million RMB)	3300	3137	163.4	0.533

Panel B: Probit regression of official departures

	(1) Departure	(2) Departure
GDP growth$_{t-1}$	-0.279	0.483
	(0.834)	(0.893)
Constant	-0.848***	-0.949
	(0.000)	(0.284)
Year fixed effects	No	Yes
Province fixed effects	No	Yes
N	279	270
Pseudo R^2	0.0001	0.146

Table IA2. R&D subsidies before and after the anti-corruption campaign: Adding a linear time trend

This table is a robustness check of Panel A of Table 5 of the paper. We add here a linear time trend to address the concern that the difference between before and after the anti-corruption campaign could be due to a general time trend. The table's methodology, organization, and data definitions are otherwise identical to Panel A of Table 5 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency$_{t-1}$	0.003***	0.003***	0.002***	0.002***	0.002**	0.001
	(0.001)	(0.001)	(0.003)	(0.002)	(0.027)	(0.324)
AETC $_{t-1}$		0.059**	0.080***	0.078***	0.085**	0.063***
		(0.025)	(0.000)	(0.000)	(0.014)	(0.001)
Post Campaign		-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
		(0.000)	(0.001)	(0.001)	(0.001)	(0.000)
R&D Efficiency $_{t-1}$×Post Campaign			0.005***	0.005***	0.006**	0.003***
			(0.000)	(0.000)	(0.018)	(0.007)
AETC $_{t-1}$×Post Campaign			-0.044*	-0.046*	-0.062*	-0.070***
			(0.078)	(0.061)	(0.056)	(0.000)
Linear time trend	0.0004***	0.001***	0.001***	0.001***	0.001***	0.0004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SOE $_{t-1}$				-0.001***	-0.0001	-0.002**
				(0.000)	(0.827)	(0.025)
Political Connection $_{t-1}$				-0.0002	-0.0002	-0.0003
				(0.271)	(0.563)	(0.330)
ROA $_{t-1}$					-0.006**	-0.005***
					(0.018)	(0.001)
Tobin's Q $_{t-1}$					0.0003***	-0.0001
					(0.003)	(0.404)
Leverage $_{t-1}$					-0.007***	-0.002**
					(0.000)	(0.015)
Constant	-0.763***	-1.182***	-1.183***	-1.088***	-0.935***	-0.712***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.081	0.084	0.087	0.091	0.120	0.643

Table IA3. R&D subsidies around government official departures: Adding year fixed effects and a linear time trend

This table presents robustness checks of Table 7 of the paper. We presents two sets of robustness results. In Panel A, we add year fixed effects to remove common variations associated with calendar years. In Panel B, we add a linear time trend to remove general time-related changes in R&D subsidies. Variable can be found in Appendix 1 of the paper. The table's methodology, organization, and data definitions are otherwise identical to Table 7 in the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. *p*-values are reported in parentheses.

Panel A: Adding year fixed effects

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency$_{t-1}$	0.003***	0.003***	0.003**	0.003**	0.003***	0.002
	(0.001)	(0.001)	(0.015)	(0.016)	(0.000)	(0.165)
AETC $_{t-1}$		0.059**	0.093***	0.089***	0.080***	0.075*
		(0.025)	(0.007)	(0.009)	(0.000)	(0.066)
Post Departure		-0.0003	-0.0003	-0.0003	-0.0003	0.0003
		(0.243)	(0.158)	(0.195)	(0.277)	(0.263)
R&D Efficiency $_{t-1}$×Post Departure			0.001	0.001	0.001	-0.002
			(0.520)	(0.480)	(0.379)	(0.197)
AETC $_{t-1}$×Post Departure			-0.067**	-0.066**	-0.052**	-0.076**
			(0.030)	(0.032)	(0.033)	(0.013)
SOE $_{t-1}$				-0.001***	-0.0001	-0.001
				(0.007)	(0.811)	(0.235)
Political Connection $_{t-1}$				-0.0002	-0.0002	-0.0001
				(0.567)	(0.485)	(0.813)
ROA $_{t-1}$					-0.005***	-0.005**
					(0.002)	(0.027)
Tobin's Q $_{t-1}$					0.0003***	-0.0001
					(0.000)	(0.636)
Leverage $_{t-1}$					-0.007***	-0.001
					(0.000)	(0.378)
Constant	0.001	0.001	0.001	0.002**	0.004***	0.001
	(0.280)	(0.229)	(0.217)	(0.034)	(0.000)	(0.358)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.082	0.085	0.086	0.090	0.119	0.650

Panel B: Adding a linear time trend

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency$_{t-1}$	0.003***	0.003***	0.003**	0.003**	0.003**	0.002
	(0.001)	(0.001)	(0.015)	(0.016)	(0.025)	(0.185)
AETC $_{t-1}$		0.059**	0.094***	0.090***	0.082**	0.078*
		(0.024)	(0.005)	(0.008)	(0.019)	(0.054)
Post Departure		-0.0003	-0.0004	-0.0003	-0.0003	0.0003
		(0.175)	(0.109)	(0.141)	(0.184)	(0.267)
R&D Efficiency $_{t-1}$×Post Departure			0.001	0.001	0.001	-0.002
			(0.490)	(0.454)	(0.529)	(0.228)
AETC $_{t-1}$×Post Departure			-0.069**	-0.069**	-0.054*	-0.078***
			(0.023)	(0.025)	(0.098)	(0.009)
Linear time trend	0.0004***	0.0004***	0.0004***	0.0003***	0.0003***	0.0002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.016)
SOE $_{t-1}$				-0.001***	-0.0001	-0.002
				(0.006)	(0.850)	(0.220)
Political Connection $_{t-1}$				-0.0002	-0.0001	-0.0002
				(0.607)	(0.690)	(0.620)
ROA $_{t-1}$					-0.005**	-0.005**
					(0.028)	(0.041)
Tobin's Q $_{t-1}$					0.0003***	-0.0001
					(0.002)	(0.518)
Leverage $_{t-1}$					-0.007***	-0.001
					(0.000)	(0.347)
Constant	-0.763***	-0.780***	-0.780***	-0.695***	-0.635***	-0.304**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.017)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.081	0.084	0.085	0.089	0.117	0.649

Table IA4. Difference-in-differences analysis: Subsidies (million RMB) before and after the anti-corruption campaign

This table is a robustness check of Table 4 of the paper. In this version, we use un-scaled subsidies (measured in millions of RMB) (in Table 4 in the paper, subsidies are scaled by sales). The table's methodology, organization, and data definitions are otherwise identical to Table 4 in the paper. Detailed variable definitions are found in the Appendix 1 in the paper. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.

Panel A: Pre-Trend Test: Annual growth in subsidies (million RMB)

	2009	2010	2011
High R&D Efficiency	0.450	0.099	0.463
Low R&D Efficiency	0.406	0.131	0.293
t-test	0.278	-0.334	1.432

	2009	2010	2011
High AETC	0.252	0.312	0.324
Low AETC	0.215	0.307	0.468
t-test	0.249	0.045	-1.235

Panel B: Subsidies (million RMB) for firms with high and low R&D efficiency

	Before	After	After - Before	t-stat
High R&D Efficiency	6.481	12.123	5.642	6.222***
Low R&D Efficiency	6.911	9.702	2.791	2.643***
High - Low	-0.430	2.421	2.851	2.048**

Panel C: Subsidies (million RMB) for firms with high and low AETC spending

	Before	After	After - Before	t-stat
High AETC	6.465	9.740	3.275	5.015***
Low AETC	4.798	11.341	6.543	6.662***
High - Low	1.667	-1.601	-3.268	-2.770***

Table IA5. R&D subsidies (million RMB) before and after the anti-corruption campaign: Panel regressions

This table is a robustness check of Panel A of Table 5 of the paper. In this version, we use un-scaled R&D subsidies (measured in millions RMB) as the dependent variable (in Table 5 in the paper, R&D subsidies are scaled by sales). The table's methodology, organization, and data definitions are otherwise identical to Panel A of Table 5 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. *p*-values are reported in parentheses.

Panel A: Full sample

Dep Var =	(1) Subsidies (mil. RMB)	(2) Subsidies (mil. RMB)	(3) Subsidies (mil. RMB)	(4) Subsidies (mil. RMB)	(5) Subsidies (mil. RMB)	(6) Subsidies (mil. RMB)
R&D Efficiency $_{t-1}$	0.810	1.690*	0.893	0.640	1.062***	-0.287
	(0.403)	(0.088)	(0.306)	(0.456)	(0.003)	(0.694)
AETC (mil. RMB) $_{t-1}$		0.234***	0.276***	0.257***	0.257***	0.168***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Post Campaign		2.411***	2.210***	2.682***	2.730**	2.509***
		(0.000)	(0.000)	(0.000)	(0.029)	(0.000)
R&D Efficiency $_{t-1}$×Post Campaign			3.677**	3.168*	2.873**	5.242***
			(0.050)	(0.086)	(0.010)	(0.001)
AETC (mil. RMB) $_{t-1}$×Post Campaign			-0.075***	-0.073**	-0.069**	-0.049**
			(0.010)	(0.010)	(0.029)	(0.025)
SOE $_{t-1}$				4.661***	3.525***	0.078
				(0.000)	(0.000)	(0.930)
Political Connection $_{t-1}$				1.171***	0.881**	1.069***
				(0.000)	(0.017)	(0.008)
ROA $_{t-1}$					24.828***	0.683
					(0.000)	(0.745)
Tobin's Q $_{t-1}$					-0.757***	-0.297***
					(0.001)	(0.000)
Leverage $_{t-1}$					6.926***	2.864***
					(0.000)	(0.005)
Constant	6.220***	5.758***	5.835***	2.567***	1.386	16.551***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.301)	(0.000)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.040	0.082	0.084	0.114	0.145	0.640

Panel B: High versus low corruption regions

	(1)	(2)	(3)	(4)
	High Corruption	High Corruption	Low Corruption	Low Corruption
	Subsidies (mil. RMB)	Subsidies (mil. RMB)	Subsidies (mil. RMB)	Subsidies (mil. RMB)
R&D Efficiency $_{t-1}$	2.425	1.608*	0.005	0.522
	(0.274)	(0.054)	(0.996)	(0.620)
AETC (mil. RMB) $_{t-1}$		0.204***		0.264***
		(0.002)		(0.000)
Post Campaign		3.619**		2.532***
		(0.016)		(0.000)
R&D Efficiency $_{t-1}$×Post Campaign		11.176**		-0.351
		(0.024)		(0.899)
AETC (mil. RMB) $_{t-1}$×Post Campaign		-0.074		-0.058
		(0.253)		(0.202)
Constant	2.616	-1.958	6.594***	1.655
	(0.212)	(0.280)	(0.000)	(0.250)
Lagged firm controls	No	Yes	No	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
N	1408	1408	5644	5644
R^2	0.062	0.138	0.037	0.160

Table IA6. Difference-in-differences analysis: Subsidies (million RMB) around government official departures

This table is a robustness check of Table 6 of the paper. In this version, we use un-scaled R&D subsidies (measured in millions RMB) (in Table 6 in the paper, R&D subsidies are scaled by sales). The table's methodology, organization, and data definitions are otherwise identical to Table 6 in the paper. Detailed variable definitions are found in the Appendix 1 in the paper. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.

Panel A: Pre-trend annual growth in subsidies

	Event Year -3	Event Year -2	Event Year -1
High R&D Efficiency	0.097	0.309	0.399
Low R&D Efficiency	0.316	0.621	0.067
t-test	-0.600	-0.768	1.219

	Event Year -3	Event Year -2	Event Year -1
High AETC	0.520	0.497	0.381
Low AETC	0.316	0.283	0.570
t-test	0.655	0.744	-0.865

Panel B: Difference-in-differences test for firms with high and low R&D efficiency

	Before	After	After - Before	t-stat
High R&D Efficiency	3.204	9.564	6.360	3.327***
Low R&D Efficiency	2.748	6.150	3.402	2.051**
High - Low	0.456	3.414	2.958	1.169

Panel C: Difference-in-differences test for firms with high and low AETC spending

	Before	After	After - Before	t-stat
High AETC	4.775	8.830	4.055	3.262***
Low AETC	3.514	12.037	8.523	4.266***
High - Low	1.261	-3.207	-4.468	-1.899*

Table IA7. R&D subsidies (million RMB) around government official departures: Panel regressions

This table is a robustness check of Table 7 of the paper. In this version, we use un-scaled R&D subsidies (measured in millions RMB) as the dependent variable (in Table 7 in the paper, R&D subsidies are scaled by sales). The table's methodology, organization, and data definitions are otherwise identical to Table 7 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Dep Var =	(1) Subsidies (mil. RMB)	(2) Subsidies (mil. RMB)	(3) Subsidies (mil. RMB)	(4) Subsidies (mil. RMB)	(5) Subsidies (mil. RMB)	(6) Subsidies (mil. RMB)
R&D Efficiency $_{t-1}$	0.810	1.102	1.750*	1.501	1.758*	0.389
	(0.403)	(0.260)	(0.077)	(0.125)	(0.067)	(0.648)
AETC (mil. RMB) $_{t-1}$		0.233***	0.263***	0.251***	0.256***	0.113***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Post Departure		0.768***	0.883***	0.867***	0.935***	0.901***
		(0.005)	(0.009)	(0.009)	(0.004)	(0.000)
R&D Efficiency $_{t-1}$×Post Departure			-1.692	-2.197	-1.917	-1.830
			(0.286)	(0.160)	(0.213)	(0.147)
AETC (mil. RMB) $_{t-1}$×Post Departure			-0.061**	-0.069**	-0.069**	-0.051**
			(0.037)	(0.016)	(0.014)	(0.024)
SOE $_{t-1}$				4.307***	3.124***	-2.655***
				(0.000)	(0.000)	(0.003)
Political Connection $_{t-1}$				1.367***	1.048***	0.945**
				(0.000)	(0.000)	(0.019)
ROA $_{t-1}$					23.094***	-2.609
					(0.000)	(0.205)
Tobin's Q $_{t-1}$					-0.826***	-0.408***
					(0.000)	(0.000)
Leverage $_{t-1}$					6.593***	3.618***
					(0.000)	(0.000)
Constant	6.220***	6.753***	6.720***	3.794***	3.027***	-0.564
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.849)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.040	0.073	0.074	0.100	0.132	0.654

Table IA8. Difference-in-differences analysis: Subsidies before and after the anti-corruption campaign, using patents/sales as an alternative R&D efficiency measure

This table is a robustness check of the upper half of Panel A and Panel B of Table 4 in the paper. In this version, we use Patents/Sales as an alternative R&D efficiency measure (in Table 4 in the paper, R&D efficiency is defined as patents over capitalized R&D as described in Equation (2) in the paper). Specifically, we calculate the average ratio of the number of Chinese patents applied by a firm in a given year that were ultimately approved by Dec 31, 2016 to the firm's revenue in a given year Patents/Sales over 2009, 2010, and 2011, the pre-campaign years. The table's methodology, organization, and data definitions are otherwise identical to the upper half of Panel A and Panel B of Table 4 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.

Panel A: Pre-Trend Test: Annual growth in subsidies

	2009	2010	2011
High Efficiency	0.425	-0.027	0.285
Low Efficiency	0.221	-0.113	0.252
t-test	1.472	1.065	0.266

Panel B: Subsidies for firms with high and low R&D efficiency

	Before	After	After - Before	t-stat
High Efficiency	0.0051	0.0063	0.0012	2.067**
Low Efficiency	0.0043	0.0041	-0.0002	-0.366
High - Low	0.0008	0.0022	0.0014	1.832*

Table IA9. R&D subsidies before and after the anti-corruption campaign: Panel regressions, using patents/sales as an alternative R&D efficiency measure

This table is a robustness check of Table 5 in the paper. In this version, we use Patents/Sales as an alternative R&D efficiency measure (in Table 5 in the paper, R&D efficiency is defined as patents over capitalized R&D as described in Equation (2) in the paper). Specifically, we calculate the average ratio of the number of Chinese patents applied by a firm in a given year that were ultimately approved by Dec 31, 2016 to the firm's revenue in a given year Patents/Sales over 2009, 2010, and 2011, the pre-campaign years. The table's methodology, organization, and variables are otherwise identical to Table 5 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. *p*-values are reported in parentheses.

Panel A: Full sample

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
Patents/Sales $_{t-1}$	0.209***	0.206***	0.189***	0.186***	0.163***	0.029**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)
AETC/Sales $_{t-1}$		0.044*	0.069***	0.068***	0.075***	0.062***
		(0.063)	(0.000)	(0.000)	(0.000)	(0.001)
Post Campaign		0.001***	0.001***	0.001**	0.001**	0.0002
		(0.000)	(0.002)	(0.015)	(0.018)	(0.240)
Patents/Sales $_{t-1}$×Post Campaign			0.036*	0.035*	0.036*	0.030*
			(0.092)	(0.098)	(0.088)	(0.090)
AETC/Sales $_{t-1}$×Post Campaign			-0.055**	-0.057**	-0.069***	-0.064***
			(0.020)	(0.015)	(0.003)	(0.001)
SOE $_{t-1}$				-0.001***	-0.001	-0.002***
				(0.000)	(0.442)	(0.004)
Political Connection $_{t-1}$				-0.0001	-0.00004	-0.0003
				(0.797)	(0.832)	(0.385)
ROA $_{t-1}$					-0.004**	-0.005***
					(0.011)	(0.001)
Tobin's Q $_{t-1}$					0.0002***	-0.0001*
					(0.000)	(0.070)
Leverage $_{t-1}$					-0.006***	-0.002***
					(0.000)	(0.003)
Constant	0.002***	0.002***	0.002***	0.003***	0.004***	0.023***
	(0.003)	(0.010)	(0.000)	(0.000)	(0.000)	(0.000)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7295	7295	7295	7295	7295	7295
R^2	0.126	0.130	0.131	0.133	0.152	0.617

Panel B: High versus low corruption regions

	(1)	(2)	(3)	(4)
	High Corruption	High Corruption	Low Corruption	Low Corruption
	Subsidies /Sales	Subsidies /Sales	Subsidies /Sales	Subsidies /Sales
Patents/Sales $_{t-1}$	0.179***	0.110***	0.213***	0.168***
	(0.000)	(0.005)	(0.000)	(0.000)
AETC/Sales $_{t-1}$		0.064***		0.079
		(0.010)		(0.114)
Post Campaign		0.002***		0.000
		(0.000)		(0.492)
Patents/Sales $_{t-1}$×Post Campaign		0.084		0.034
		(0.198)		(0.323)
AETC/Sales $_{t-1}$×Post Campaign		-0.150***		-0.014
		(0.000)		(0.577)
Constant	0.001	0.002	0.003***	0.005***
	(0.620)	(0.226)	(0.000)	(0.000)
Lagged firm controls	No	Yes	No	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
N	1475	1475	5820	5820
R^2	0.077	0.128	0.134	0.159

Table IA10. Difference-in-differences analysis: Subsidies around government official departures, using patents/sales as an alternative R&D efficiency measure

This table is a robustness check of the upper half of Panel A and Panel B of Table 6 in the paper. In this version, we use Patents/Sales as an alternative R&D efficiency measure (in Table 6 in the paper, R&D efficiency is defined as patents over capitalized R&D as described in Equation (2) in the paper). Specifically, we calculate the average ratio of the number of Chinese patents applied by a firm in a given year that were ultimately approved by Dec 31, 2016 to the firm's revenue in a given year Patents/Sales over 2009, 2010, and 2011, the pre-campaign years. The table's methodology, organization, and variables are otherwise identical to the upper half of Panel A and Panel B of Table 6 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels in a two-tailed test, respectively.

Panel A: Pre-trend annual growth in subsidies

	Event Year -3	Event Year -2	Event Year -1
High R&D Efficiency	0.362	0.378	-0.104
Low R&D Efficiency	0.103	0.461	-0.202
t-test	0.785	-0.255	0.628

Panel B: Difference-in-differences test for firms with high and low R&D efficiency

	Before	After	After - Before	t-stat
High R&D Efficiency	0.0029	0.0055	0.0026	2.850***
Low R&D Efficiency	0.0015	0.0021	0.0006	0.989
High - Low	0.0014	0.0034	0.0020	1.893*

Table IA11. R&D subsidies around government official departures: Panel regressions using patents/sales as an alternative R&D efficiency measure

This table is a robustness check of Table 7 in the paper. In this version, we use Patents/Sales as an alternative R&D efficiency measure (in Table 7 in the paper, R&D efficiency is defined as patents over capitalized R&D as described in Equation (2) in the paper). Specifically, we calculate the average ratio of the number of Chinese patents applied by a firm in a given year that were ultimately approved by Dec 31, 2016 to the firm's revenue in a given year Patents/Sales over 2009, 2010, and 2011, the pre-campaign years. The table's methodology, organization, and variables are otherwise identical to Table 7 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
Patents/Sales $_{t-1}$	0.271***	0.269***	0.250***	0.245***	0.222***	0.073**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.039)
AETC/Sales $_{t-1}$		0.045*	0.087***	0.084***	0.079**	0.072*
		(0.051)	(0.005)	(0.006)	(0.014)	(0.061)
Post Departure		0.00004	-0.0001	-0.0001	-0.0001	0.0004*
		(0.839)	(0.617)	(0.635)	(0.693)	(0.082)
Patents/Sales $_{t-1}$×Post Departure			0.057	0.057	0.045	-0.058
			(0.351)	(0.353)	(0.462)	(0.293)
AETC/Sales $_{t-1}$×Post Departure			-0.087***	-0.086***	-0.072**	-0.075***
			(0.002)	(0.002)	(0.017)	(0.008)
SOE $_{t-1}$				-0.001***	-0.0003	-0.002
				(0.008)	(0.526)	(0.119)
Political Connection $_{t-1}$				-0.00003	-0.00002	0.00002
				(0.927)	(0.951)	(0.951)
ROA $_{t-1}$					-0.005**	-0.005**
					(0.039)	(0.042)
Tobin's Q $_{t-1}$					0.0002**	-0.0001
					(0.026)	(0.271)
Leverage $_{t-1}$					-0.005***	-0.001
					(0.000)	(0.580)
Constant	0.002***	0.002***	0.002***	0.003***	0.005***	0.001*
	(0.003)	(0.003)	(0.002)	(0.000)	(0.000)	(0.065)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7295	7295	7295	7295	7295	7295
R^2	0.136	0.138	0.140	0.143	0.158	0.643

Table IA12. Placebo tests using patents/sales as an alternative R&D efficiency measure

This table is a robustness check of Table 8 in the paper. In this version, we use Patents/Sales as an alternative R&D efficiency measure (in Table 8 in the paper, R&D efficiency is defined as patents over capitalized R&D input as described in Equation (2) in the paper). Specifically, we calculate the average ratio of the number of Chinese patents applied by a firm in a given year that were ultimately approved by Dec 31, 2016 to the firm's revenue in a given year Patents/Sales over 2009, 2010, and 2011, the pre-campaign years. The table's methodology, organization, and variables are otherwise identical to Table 8 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
	Actual cutoff year=2012	Placebo cutoff year=2009	Placebo cutoff year=2010	Placebo cutoff year=2011
Dep Var =	Subsidies /Sales	Subsidies /Sales	Subsidies /Sales	Subsidies /Sales
Patents/Sales $_{t-1}$	0.163***	0.041	0.099*	0.139***
	(0.000)	(0.631)	(0.060)	(0.003)
AETC/Sales $_{t-1}$	0.075***	0.105**	0.080**	0.077***
	(0.000)	(0.016)	(0.026)	(0.007)
Post Campaign	0.001**	0.001	0.001**	0.001***
	(0.018)	(0.118)	(0.013)	(0.004)
Patents/Sales $_{t-1}$×Post Campaign	0.036*	0.203	0.125	0.076
	(0.088)	(0.135)	(0.102)	(0.177)
AETC/Sales $_{t-1}$×Post Campaign	-0.069***	-0.041	-0.026	-0.030
	(0.003)	(0.284)	(0.601)	(0.524)
Constant	0.004***	0.004***	0.004***	0.004***
	(0.000)	(0.001)	(0.003)	(0.003)
Lagged firm controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes

Table IA13. Subsidies and future innovation before and after the anti-corruption campaign: Alternative patent measures

This table is robustness check of Panel A of Table 10 in the paper. Here, we use two alternative measures of patents. In Panel A, the dependent variable is the natural logarithm of (1 plus) the number of US utility patent applications filed by a firm in a given year that were ultimately approved by Dec 31, 2017. In Panel B, we scale the number of US utility patents filed by a firm in a given year that were ultimately approved by Dec 31, 2017 by firm assets at the beginning of the year (in Panel A of Table 10 of the paper, the dependent variable is US Patents/Sales.) The table's methodology, organization, and variables are otherwise identical to Panel A of Table 10 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Future US patents （Ln(Patents+1)）

	(1) Ln(Patents+1) (US)	(2) Ln(Patents+1) (US)	(3) Ln(Patents+1) (US)	(4) Ln(Patents+1) (US)
Ln(Patents+1) (US)$_{t-1}$	0.683***	0.682***	0.671***	0.661***
	(0.000)	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	1.087*	0.246	0.257	0.109
	(0.053)	(0.627)	(0.612)	(0.823)
Subsidies/Sales $_{t-1}$×Post Campaign		1.296*	1.429**	1.459**
		(0.074)	(0.049)	(0.043)
Constant	0.014*	0.015**	-0.474***	-0.547***
	(0.067)	(0.040)	(0.000)	(0.000)
Lagged firm controls	No	No	Yes	Yes
Industry fixed effects	No	No	No	Yes
Province fixed effects	No	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	8527	8527	8527	8527
R^2	0.366	0.366	0.371	0.375

Panel B: Future US patents （Patents/Assets）

	(1) Patents/Assets (US)	(2) Patents/Assets (US)	(3) Patents/Assets (US)	(4) Patents/Assets (US)
Patents/Assets (US) $_{t-1}$	0.522***	0.522***	0.518***	0.511***
	(0.000)	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	0.001**	-0.0002	-0.001	-0.001
	(0.026)	(0.737)	(0.314)	(0.211)
Subsidies/Sales $_{t-1}$×Post Campaign		0.002**	0.002**	0.002***
		(0.019)	(0.011)	(0.009)
Constant	0.00001	0.00002*	-0.00004	-0.0001
	(0.149)	(0.085)	(0.707)	(0.434)
Lagged firm controls	No	No	Yes	Yes
Industry fixed effects	No	No	No	Yes
Province fixed effects	No	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	8527	8527	8527	8527
R^2	0.257	0.258	0.260	0.265

Table IA14. Subsidies and future innovation around government official departures: Alternative patent measures

This table is a robustness check of Panel A of Table 11 in the paper. Here, we use two alternative measures of patents. In Panel A, the dependent variable is the natural logarithm of (1 plus) the number of US utility patent applications filed by a firm in a given year that were ultimately approved by Dec 31, 2017. In Panel B, we scale the number of US utility patents filed by a firm in a given year that were ultimately approved by Dec 31, 2017 by firm assets at the beginning of the year. (In Panel A of Table 11 of the paper, the dependent variable is US Patents/Sales.) The table's methodology, organization, and variables are otherwise identical to Panel A of Table 11 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Future US patents （Ln(Patents+1)）

	(1) Ln(Patents+1) (US)	(2) Ln(Patents+1) (US)	(3) Ln(Patents+1) (US)
Ln(Patents+1) (US) $_{t-1}$	0.683***	0.672***	0.662***
	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	0.195	0.280	0.088
	(0.653)	(0.527)	(0.846)
Post Departure	-0.011*	-0.011*	-0.007
	(0.077)	(0.084)	(0.345)
Subsidies/Sales $_{t-1}$×Post Departure	2.047***	2.075***	2.212***
	(0.001)	(0.001)	(0.001)
Constant	0.017	-0.478***	-0.545***
	(0.205)	(0.000)	(0.000)
Lagged firm controls	No	Yes	Yes
Industry fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
Year fixed effects	Yes	Yes	Yes
N	8527	8527	8527
R^2	0.367	0.371	0.376

Panel B: Future US patents （Patents/Assets）

	(1) Patents/Assets (US)	(2) Patents/Assets (US)	(3) Patents/Assets (US)
Patents/Assets (US) $_{t-1}$	0.523***	0.520***	0.512***
	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	0.001	0.0003	0.0001
	(0.234)	(0.534)	(0.832)
Post Departure	-0.00001*	-0.00001*	-0.00001
	(0.059)	(0.073)	(0.468)
Subsidies/Sales $_{t-1}$×Post Departure	0.002**	0.002**	0.002***
	(0.019)	(0.011)	(0.008)
Constant	0.00002	-0.00004	-0.0001
	(0.207)	(0.673)	(0.337)
Lagged firm controls	No	Yes	Yes
Industry fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
Year fixed effects	Yes	Yes	Yes
N	8527	8527	8527
R^2	0.258	0.260	0.264

Table IA15. Subsidies and future innovation: before and after the anti-corruption campaign, using Chinese patent data to measure future innovation

This table is a robustness check of Panels A and B of Table 10, in the paper. In this version, we use Chinese patent and citation data as an alternative measure for future innovation (in Panels A and B of Table 10 in the paper, future innovation is measured using US patent and citation data). The table's methodology, organization, and data are otherwise identical to Panels A and B of Table 10 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are reported in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies and future patents

	(1)	(2)	(3)	(4)
	Patents/Sales	Patents/Sales	Patents/Sales	Patents/Sales
Patents/Sales $_{t-1}$	0.661***	0.658***	0.641***	0.630***
	(0.000)	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	0.088***	0.066***	0.057***	0.056***
	(0.000)	(0.000)	(0.000)	(0.000)
Post Campaign		0.0002	0.0004**	0.0004**
		(0.222)	(0.031)	(0.041)
Subsidies/Sales $_{t-1}$×Post Campaign		0.063**	0.057**	0.051**
		(0.013)	(0.024)	(0.043)
Size $_{t-1}$			-0.0003***	-0.0002**
			(0.004)	(0.045)
Age $_{t-1}$			-0.001***	-0.001***
			(0.003)	(0.002)
Leverage $_{t-1}$			-0.002***	-0.002***
			(0.000)	(0.000)
Intangible Asset $_{t-1}$			-0.003	-0.002
			(0.166)	(0.265)
ROA $_{t-1}$			0.002	0.001
			(0.229)	(0.313)
Tobin's Q $_{t-1}$			-0.0001	-0.0001
			(0.184)	(0.261)
SOE $_{t-1}$			-0.00001	0.0001
			(0.959)	(0.651)
Political Connection $_{t-1}$			-0.0001	-0.00001
			(0.657)	(0.927)
Constant	0.001***	0.001***	0.009***	0.007***
	(0.000)	(0.000)	(0.000)	(0.001)
Industry fixed effects	No	No	No	Yes
Province fixed effects	No	No	No	Yes
N	7295	7295	7295	7295
R^2	0.465	0.466	0.471	0.476

Panel B: Subsidies and future patent citation strength

	(1) Relative Citation Strength	(2) Relative Citation Strength	(3) Relative Citation Strength	(4) Relative Citation Strength
Relative Citation Strength $_{t-1}$	0.264***	0.264***	0.246***	0.233***
	(0.000)	(0.000)	(0.000)	
Subsidies/Sales $_{t-1}$	2.827***	3.079***	2.827***	3.228***
	(0.000)	(0.000)	(0.001)	(0.001)
Post Campaign		-0.186***	-0.184***	-0.190***
		(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$×Post Campaign		2.179*	2.437**	3.033**
		(0.078)	(0.049)	(0.025)
Constant	0.294***	0.380***	0.019	-0.233
	(0.000)	(0.000)	(0.924)	(0.298)
Firm-level controls	No	No	Yes	Yes
Industry fixed effects	No	No	No	Yes
Province fixed effects	No	No	No	Yes
N	7295	7295	7295	7295
R^2	0.071	0.082	0.094	0.104

Table IA16. Subsidies and future innovation: around government official departures, using Chinese patent data to measure future innovation

This table is a robustness check of Panels A and B of Table 11 in the paper. In this version, we use Chinese patent and citation data as an alternative measure for future innovation (in Panels A and B of Table 11 in the paper, future innovation is measured using US patent and citation data). The table's methodology, organization, and data are otherwise identical to Panels A and B of Table 11 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are reported in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies and future patents

	(1)	(2)	(3)
	Patents/Sales	Patents/Sales	Patents/Sales
$Patents/Sales_{t-1}$	0.661***	0.645***	0.633***
	(0.000)	(0.000)	(0.000)
$Subsidies/Sales_{t-1}$	0.071***	0.063***	0.060***
	(0.000)	(0.000)	(0.000)
Post Departure	-0.0002	-0.0001	0.0001
	(0.318)	(0.631)	(0.756)
$Subsidies/Sales_{t-1}$ ×Post Departure	0.067**	0.060**	0.054**
	(0.011)	(0.022)	(0.039)
Constant	0.001***	0.008***	0.005***
	(0.000)	(0.000)	(0.007)
Lagged firm controls	No	Yes	Yes
Industry fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
N	7295	7295	7295
R^2	0.465	0.47	0.475

Panel B. Subsidies and future patent citations

	(1) Relative Citation Strength	(2) Relative Citation Strength	(3) Relative Citation Strength
Relative Citation Strength$_{t-1}$	0.263***	0.245***	0.233***
	(0.000)	(0.000)	(0.000)
Subsidies/Sales $_{t-1}$	0.43	0.615	1.355
	(0.778)	(0.690)	(0.385)
Post Departure	-0.091***	-0.076***	-0.092***
	(0.000)	(0.001)	(0.000)
Subsidies/Sales $_{t-1}$ ×Post Departure	9.568**	8.616**	8.227**
	(0.012)	(0.023)	(0.029)
Constant	0.332***	0.421*	0.195
	(0.000)	(0.069)	(0.416)
Lagged firm controls	No	Yes	Yes
Industry fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
N	7295	7295	7295
R^2	0.073	0.087	0.096

Table IA17. Subsidies before and after the anti-corruption campaign, by funding source

This table is a robustness check of Panel A of Table 5 of the paper. In this version, we separate the funding sources into funds strongly or weakly related to innovation. Subsidies strongly related to innovation include subsidy types 1, 2, 3, 4, and 6. Funding sources weakly related to innovation include subsidy types 5 and 7 (see Section 2B and Table 2 of the paper for definitions and descriptions of the subsidy types) (in Table 5 in the paper, we include total R&D subsidies from all seven categories of subsidies). The table's methodology, organization, and data are otherwise identical to Panel A of Table 5 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies strongly related to innovation

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency$_{t-1}$	0.002***	0.002***	0.002***	0.002***	0.002***	0.0004
	(0.008)	(0.003)	(0.001)	(0.000)	(0.002)	(0.373)
AETC $_{t-1}$		0.052**	0.072***	0.071***	0.075***	0.062***
		(0.016)	(0.000)	(0.000)	(0.000)	(0.000)
Post Campaign		0.001***	0.0004**	0.0004**	0.0003*	0.0001
		(0.000)	(0.010)	(0.035)	(0.053)	(0.488)
R&D Efficiency $_{t-1}$×Post Campaign			0.002**	0.002**	0.002**	0.002*
			(0.049)	(0.044)	(0.035)	(0.053)
AETC $_{t-1}$×Post Campaign			-0.043**	-0.045**	-0.056***	-0.055***
			(0.030)	(0.024)	(0.004)	(0.001)
SOE $_{t-1}$				-0.001***	0.0001	-0.001
				(0.000)	(0.652)	(0.174)
Political Connection $_{t-1}$				-0.0001	-0.0001	-0.00004
				(0.482)	(0.571)	(0.891)
ROA $_{t-1}$					-0.004***	-0.004***
					(0.002)	(0.001)
Tobin's Q $_{t-1}$					0.0002***	-0.00002
					(0.000)	(0.749)
Leverage $_{t-1}$					-0.005***	-0.001
					(0.000)	(0.205)
Constant	0.002**	0.001*	0.001***	0.002***	0.003***	-0.012
	(0.031)	(0.064)	(0.000)	(0.000)	(0.000)	(0.261)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.058	0.063	0.064	0.066	0.090	0.602

Panel B: Subsidies weakly related to innovation

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency$_{t-1}$	0.001**	0.001**	0.0001	0.0001	0.0001	-0.0003
	(0.036)	(0.010)	(0.476)	(0.363)	(0.669)	(0.208)
AETC $_{t-1}$		0.009	0.009	0.008	0.012	0.001
		(0.197)	(0.290)	(0.337)	(0.157)	(0.929)
Post Campaign		0.001***	0.0003***	0.0002**	0.0002**	0.00003
		(0.000)	(0.001)	(0.016)	(0.021)	(0.785)
R&D Efficiency $_{t-1}$×Post Campaign			0.003***	0.003***	0.003***	0.001
			(0.003)	(0.002)	(0.002)	(0.107)
AETC $_{t-1}$×Post Campaign			0.001	-0.0002	-0.005	-0.011
			(0.938)	(0.982)	(0.642)	(0.387)
SOE $_{t-1}$				-0.001***	-0.0003*	-0.001*
				(0.000)	(0.061)	(0.074)
Political Connection $_{t-1}$				-0.00001	-0.00001	0.0001
				(0.960)	(0.932)	(0.483)
ROA $_{t-1}$					-0.001	-0.001
					(0.311)	(0.238)
Tobin's Q $_{t-1}$					0.0001	-0.00004
					(0.112)	(0.239)
Leverage $_{t-1}$					-0.002***	-0.001*
					(0.000)	(0.063)
Constant	0.001**	0.001*	0.001**	0.001***	0.002***	-0.005***
	(0.015)	(0.067)	(0.048)	(0.005)	(0.000)	(0.000)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.048	0.053	0.057	0.064	0.080	0.538

Table IA18. Subsidies around government official departures, by funding source

This table is a robustness check of Table 7 of the paper. In this version, we separate the funding sources into funds strongly or weakly related to innovation. Subsidies strongly related to innovation include subsidy types 1, 2, 3, 4, and 6. Funding sources weakly related to innovation include subsidy types 5 and 7 (see Section 2B and Table 2 of the paper for definitions and descriptions of the subsidy types) (in Table 7 in the paper, we include total R&D subsidies from all seven categories of subsidies). The table's methodology, organization, and data are otherwise identical to Table 7 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies strongly related to innovation

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency $_{t-1}$	0.002***	0.002***	0.002**	0.002**	0.002**	0.001
	(0.008)	(0.006)	(0.034)	(0.031)	(0.042)	(0.172)
AETC/Sales $_{t-1}$		0.052**	0.083***	0.081***	0.076***	0.071*
		(0.016)	(0.003)	(0.004)	(0.009)	(0.050)
Post Departure		0.00002	0.00002	0.00002	0.00002	0.0003*
		(0.902)	(0.912)	(0.907)	(0.900)	(0.095)
R&D Efficiency $_{t-1}$×Post Departure			0.0003	0.0004	0.0002	-0.001
			(0.848)	(0.807)	(0.885)	(0.397)
AETC/Sales $_{t-1}$×Post Departure			-0.063**	-0.063**	-0.052**	-0.060**
			(0.010)	(0.011)	(0.043)	(0.021)
SOE $_{t-1}$				-0.001**	0.00002	-0.001
				(0.030)	(0.949)	(0.352)
Political Connection $_{t-1}$				-0.0001	-0.0001	-0.0002
				(0.787)	(0.847)	(0.571)
ROA $_{t-1}$					-0.005**	-0.004**
					(0.019)	(0.032)
Tobin's Q $_{t-1}$					0.0002***	-0.00004
					(0.007)	(0.625)
Leverage $_{t-1}$					-0.005***	-0.0003
					(0.000)	(0.801)
Constant	0.002**	0.002**	0.002**	0.002***	0.003***	0.001
	(0.031)	(0.028)	(0.027)	(0.007)	(0.000)	(0.132)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.058	0.061	0.063	0.065	0.088	0.618

Panel B: Subsidies weakly related to innovation

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency $_{t-1}$	0.001**	0.001**	0.0004	0.0004	0.0004	0.0001
	(0.036)	(0.033)	(0.137)	(0.116)	(0.166)	(0.801)
AETC/Sales $_{t-1}$		0.009	0.010	0.009	0.009	0.004
		(0.200)	(0.219)	(0.298)	(0.290)	(0.748)
Post Departure		-0.0001	-0.0001	-0.0001	-0.0001	0.0001
		(0.540)	(0.339)	(0.332)	(0.343)	(0.529)
R&D Efficiency $_{t-1}$×Post Departure			0.001	0.001	0.001	-0.001
			(0.411)	(0.355)	(0.411)	(0.277)
AETC/Sales $_{t-1}$×Post Departure			-0.003	-0.002	0.001	-0.014
			(0.786)	(0.816)	(0.889)	(0.223)
SOE $_{t-1}$				-0.001***	-0.0003**	-0.001*
				(0.000)	(0.025)	(0.066)
Political Connection $_{t-1}$				0.00003	0.00002	0.0001
				(0.804)	(0.847)	(0.463)
ROA $_{t-1}$					-0.001	-0.001
					(0.215)	(0.246)
Tobin's Q $_{t-1}$					0.00004	-0.0001
					(0.197)	(0.171)
Leverage $_{t-1}$					-0.002***	-0.001
					(0.000)	(0.102)
Constant	0.001**	0.001**	0.001**	0.001***	0.002***	0.001**
	(0.015)	(0.014)	(0.013)	(0.001)	(0.000)	(0.039)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.048	0.049	0.049	0.056	0.073	0.538

Table IA19. Subsidies and future innovation: before and after the anti-corruption campaign, by funding source

This table is a robustness check of model (3) of Panels A, B, and C of Table 10 of the paper. In this version, we separate the funding sources into funds strongly or weakly related to innovation. Subsidies strongly related to innovation include subsidy types 1, 2, 3, 4, and 6. Funding sources weakly related to innovation include subsidy types 5 and 7 (see Section 2B and Table 2 of the paper for definitions and descriptions of the subsidy types) (in Table 10 in the paper, we include total R&D subsidies from all seven categories of subsidies). The table's methodology, organization, and data are otherwise identical to model (3) of Panels A, B, and C of Table 10 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies strongly related to innovation

	(1) Patents/ Sales (U.S.)	(2) Relative Citation Strength (U.S.)	(3) Foreign sales/ Sales
Patents/Sales (U.S.)$_{t-1}$	0.485***		
	(0.000)		
Relative Citation Strength (U.S.)$_{t-1}$		0.210***	
		(0.000)	
Foreign sales/ Sales $_{t-1}$			0.893***
			(0.000)
Subsidies/Sales $_{t-1}$	0.003	1.386**	-0.345***
	(0.134)	(0.016)	(0.008)
Subsidies/Sales $_{t-1}$×Post Campaign	0.006*	1.073**	0.794**
	(0.064)	(0.022)	(0.012)
Constant	-0.0002	-0.297***	-0.057**
	(0.316)	(0.000)	(0.013)
Lagged firm controls	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	7295	7295	7295
R^2	0.285	0.077	0.836

Panel B: Subsidies weakly related to innovation

	(1) Patents/ Sales (U.S.)	(2) Relative Citation Strength (U.S.)	(3) Foreign sales/ Sales
Patents/Sales (U.S.)$_{t-1}$	0.491***		
	(0.000)		
Relative Citation Strength (U.S.)$_{t-1}$		0.212***	
		(0.000)	
Foreign sales/ Sales $_{t-1}$			0.893***
			(0.000)
Subsidies/Sales $_{t-1}$	0.001	1.353	-0.502
	(0.778)	(0.281)	(0.322)
Subsidies/Sales $_{t-1}$×Post Campaign	0.001	0.812	0.738
	(0.893)	(0.604)	(0.400)
Constant	-0.0002	-0.286***	-0.057**
	(0.437)	(0.001)	(0.013)
Lagged firm controls	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	7295	7295	7295
R^2	0.281	0.074	0.836

Table IA20. Subsidies and future innovation: around government official departures, by funding source

This table is a robustness check of model (3) of Panels A, B, and C of Table 11 of the paper. In this version, we separate the funding sources into funds strongly or weakly related to innovation. Subsidies strongly related to innovation include subsidy types 1, 2, 3, 4, and 6. Funding sources weakly related to innovation include subsidy types 5 and 7 (see Section 2B and Table 2 of the paper for definitions and descriptions of the subsidy types) (in Table 11 in the paper, we include total R&D subsidies from all seven categories of subsidies). The table's methodology, organization, and data are otherwise identical to model (3) of Panels A, B, and C of Table 11 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Subsidies strongly related to innovation

	(1) Patents/ Sales (U.S.)	(2) Relative Citation Strength (U.S.)	(3) Foreign sales/ Sales
Patents/Sales (U.S.)$_{t-1}$	0.486***		
	(0.000)		
Relative Citation Strength (U.S.)$_{t-1}$		0.210***	
		(0.000)	
Foreign sales/ Sales $_{t-1}$			0.896***
			(0.000)
Subsidies/Sales $_{t-1}$	0.005***	1.581***	-0.014
	(0.000)	(0.002)	(0.905)
Post Departure	-0.00004**	-0.012***	0.004
	(0.026)	(0.000)	(0.214)
Subsidies/Sales $_{t-1}$×Post Departure	0.005*	1.731***	0.716*
	(0.094)	(0.007)	(0.095)
Constant	-0.0002	-0.301***	-0.050**
	(0.246)	(0.000)	(0.046)
Lagged firm controls	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	7295	7295	7295
R^2	0.285	0.078	0.836

Panel B: Subsidies weakly related to innovation

	(1) Patents/ Sales (U.S.)	(2) Relative Citation Strength (U.S.)	(3) Foreign sales/ Sales
Patents/Sales (U.S.)$_{t-1}$	0.490***		
	(0.000)		
Relative Citation Strength (U.S.)$_{t-1}$		0.212***	
		(0.000)	
Foreign sales/ Sales $_{t-1}$			0.893***
			(0.000)
Subsidies/Sales $_{t-1}$	0.002	1.721	-0.531
	(0.573)	(0.152)	(0.352)
Post Departure	-0.00003**	-0.008	0.004
	(0.032)	(0.135)	(0.120)
Subsidies/Sales $_{t-1}$×Post Departure	-0.001	0.665	2.774
	(0.874)	(0.846)	(0.138)
Constant	-0.0002	-0.287***	-0.055**
	(0.424)	(0.001)	(0.017)
Lagged firm controls	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	7295	7295	7295
R^2	0.281	0.074	0.836

Table IA21. Subsidies before and after government official departures, by departure type

This table is a robustness check of Table 7 of the paper. In this version, we separate the departures into "good" and "bad" departures. Good departures include promotions or lateral moves within the technology bureau system. Bad departures include demotions, lateral moves outside the technology bureau system, retirement, or being punished for wrongdoing. Post Good Departure and Post Bad Departure are indicator variables that equal one for three years after the official departures of the respective type (in Table 7 in the paper, we include all official departures). The table's methodology, organization, and data are otherwise identical to Table 7 in the paper. Detailed variable definitions are found in the Appendix 1 of the paper. Huber-White heteroskedasticity-consistent standard errors clustered by firm are used for all regressions. *p*-values are in parentheses. *, **, *** indicates statistical significance at the 10%, 5%, and 1% level, respectively.

Dep Var =	(1) Subsidies /Sales	(2) Subsidies /Sales	(3) Subsidies /Sales	(4) Subsidies /Sales	(5) Subsidies /Sales	(6) Subsidies /Sales
R&D Efficiency $_{t-1}$	0.003***	0.003***	0.002*	0.002	0.002*	0.001
	(0.004)	(0.003)	(0.095)	(0.100)	(0.093)	(0.195)
AETC/Sales $_{t-1}$		0.059**	0.087**	0.083**	0.079**	0.076*
		(0.025)	(0.011)	(0.013)	(0.013)	(0.062)
Post Good Departure		0.0004	0.00003	-0.0001	-0.00003	0.001
		(0.245)	(0.962)	(0.930)	(0.959)	(0.169)
Post Bad Departure		-0.0003	-0.0004	-0.0003	-0.0003	-0.00001
		(0.212)	(0.371)	(0.376)	(0.455)	(0.979)
R&D Efficiency $_{t-1}$×Post Good Departure			0.006	0.007	0.006	-0.001
			(0.322)	(0.303)	(0.282)	(0.570)
AETC/Sales $_{t-1}$×Post Good Departure			-0.064	-0.061	-0.077	-0.089
			(0.311)	(0.353)	(0.283)	(0.102)
R&D Efficiency $_{t-1}$×Post Bad Departure			0.001	0.001	0.001	-0.002
			(0.752)	(0.711)	(0.763)	(0.365)
AETC/Sales $_{t-1}$×Post Bad Departure			-0.051**	-0.050**	-0.033*	-0.074**
			(0.015)	(0.017)	(0.066)	(0.026)
SOE $_{t-1}$				-0.001***	-0.0003	-0.001
				(0.004)	(0.250)	(0.275)
Political Connection $_{t-1}$				-0.00004	-0.00002	0.0001
				(0.868)	(0.934)	(0.940)
ROA $_{t-1}$					-0.006**	-0.005
					(0.048)	(0.110)
Tobin's Q $_{t-1}$					0.0003**	-0.0001
					(0.041)	(0.502)
Leverage $_{t-1}$					-0.007***	-0.001
					(0.003)	(0.323)
Constant	0.003***	0.003***	0.003**	0.004***	0.005***	0.009*
	(0.006)	(0.004)	(0.027)	(0.005)	(0.002)	(0.053)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Province fixed effects	Yes	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	No	Yes
N	7052	7052	7052	7052	7052	7052
R^2	0.073	0.076	0.078	0.084	0.114	0.640