How Effective Are R&D Tax Incentives? Reconciling the Micro and Macro Evidence

Supplementary Materials

Silvia Appelt Matěj Bajgar Chiara Criscuolo
Fernando Galindo-Rueda

A R&D Tax Incentive Design

Table A.1: R&D Tax Incentive Scheme Data

Availability of R&D tax incentives						Main R&D tax incentive design features, last year of observation				
Country	**Sample period**	**Name of scheme**	**Year introduced**	**Year repealed**	**Last year observation**	**Instrument**	**Eligible R&D expenditures**	**Tax credit/ allowance rate (%)**	**Base amount (if incremental)**	**Limitations (floor, threshold, ceiling)**
Baseline data sample (countries with BERD survey and tax relief microdata										
AUS	2005-2018	R&D tax concession measures	1985	2011	2011	Hybrid R&D tax allowance	C, MED	Volume: 25; Increment: 50	Average R&D spend in previous three years	Minimum R&D spend of AUD 20k; Maximum amount of R&D capped at AUD 2 million
		R&D tax incentive	2012	-	2018	Volume-based R&D tax credit[AUS]	C, MED	Large firms: 38.5; SMEs: 43.5	Average R&D spend in previous three years	Minimum R&D spend of AUD 20k; Maximum amount of R&D capped at AUD 100 million
BEL	2003-2019	R&D Investment Deduction	1992	-	2019	Volume-based R&D tax allowance	ME, Intangibles, B	13.5[BEL1]	-	-
		Payroll Withholding Tax Credit	2005	-	2019	Payroll Withholding Tax Credit[BEL2]	L	80	-	-
CZE	2000-2021	R&D tax allowance	2005	-	2021	Hybrid R&D tax allowance	C, MED	Volume: 100; Increment: 10	R&D spend in previous year	-
FRA	2001-2015	R&D tax credit - Crédit d'Impôt Recherche (CIR)	1983	-	2015	Volume-based R&D tax credit	C, MED, BD	30 (R&D expenses up to EUR 100 million), 5 (R&D expenses above EUR 100 million)	-	Treshold of EUR 100 million. Maximum amount of subcontracted R&D capped at EUR 12 million[FRA]
ITA	2008-2019	R&D tax credit (Law 296/2006)	2006	2009	2009	Volume-based R&D tax credit	C, ME, B, Intangibles	10	-	Maximum amount of R&D capped at EUR 50 million.
		R&D tax credit (Law 145/2013, Legge di Stabilità 2015, Budget Law 2017 and 2019)	2015	2019	2019	Incremental R&D tax credit	C, MED, Intangibles	25 (50 for R&D labour costs)	Average R&D spend in 2012-2014	Minimum R&D spend of EUR 30k
NLD	2014-2019	WBSO	1994	-	2019	Payroll Withholding Tax Credit[NLD]	C, ME, B, Intangibles	32 for eligible R&D costs up to EUR 350k, 16 above EUR 350k	-	Threshold of EUR 350k
		RDA	2012	2015	2015	Volume-based R&D tax allowance	C, ME, B, Intangibles	60	-	-
NOR	2001-2021	SKATTEFUNN R&D tax credit	2002NOR	-	2021	Volume-based R&D tax credit	C, ME	19	-	Maximum amount of R&D capped at NOK 25 million (intramural and purchased R&D)
NZL	2003-2019	R&D tax credit	2008	2009	2009	Volume-based R&D tax credit	C, ME, B	15	-	Minimum R&D spend of NZD 20k
		Research and Development Tax Incentive	2019		2019	Volume-based R&D tax credit	C, MED, BD	15	-	Minimum R&D spend of NZD 50k. Maximum amount of R&D capped at NZD 120 million.
PRT	2001-2019	SIFIDE tax credit I	1997	2003	2003	Hybrid R&D tax credit	C, ME, Intangibles	Volume: 20; Increment: 50	Average R&D spend in previous two years	-
		SIFIDE tax credit II	2006	-	2019	Hybrid R&D tax credit	C, ME, Intangibles	Volume: 32.5; Increment: 50	Average R&D spend in previous two years	Incremental Maximum amount of R&D capped at EUR 1.5 million
SVK	2010-2021	R&D tax allowance	2015	-	2021	Volume-based R&D tax allowance	C, ME, B, Intangibles	Volume: 200; Increment: 100	Dedicated formula[SVK]	-
SWE	2011-2017	Partial exemption of social security contributions[SWE]	2014	-	2017	Exemption	L	10	-	Maximum amount of R&D capped at SEK 2.76 million

Table A.1: R&D Tax Incentive Scheme Data (*continued*)

Availability of R&D tax incentives						Main R&D tax incentive design features, last year of observation				
Country	**Sample period**	**Name of scheme**	**Year introduced**	**Year repealed**	**Last year observation**	**Instrument**	**Eligible R&D expenditures**	**Tax credit/ allowance rate (%)**	**Base amount (if incremental)**	**Limitations (floor, threshold, ceiling)**
Additional countries (with BERD survey microdata) included in extended data sample										
AUT	2004-2015	R&D premium	2002	-	2015	Volume-based R&D tax credit	C	10	-	Maximum amount of subcontracted R&D capped at EUR 1 million
CHL	2009-2015	R&D tax credit for extramural expenses	2008	2012	2012	Volume-based R&D tax credit	C (extramural)	Gross rate of 35 (net: 28.05)[CHL1]	-	Minimum R&D spend of 100 UTM. Maximum amount of R&D capped at 5,000 UTM[CHL2]
		R&D tax credit for intramural and extramural expenses	2012	-	2015	Volume-based R&D tax credit	C, MED	Gross rate of 35 (net: 27.125)[CHL1]	-	Minimum R&D spend of 100 UTM. Maximum amount of R&D capped at 15,000 UTM[CHL2]
ESP	2007-2016	R&D&I tax credit[ESP]	-	-	2016	Hybrid R&D tax credit	C, ME, Intangibles	Volume: C: 25, +17 (R&D staff); ME and intangibles: 8; Increment: C: 17	Average R&D spend in previous two years	-
GBR	2000-2020	R&D tax allowance[GBR1]	2000	-	2020	Volume-based R&D tax allowance	C, Intangibles	SMEs: 130	-	-
		Research and Development Expenditure Credit (RDEC) Scheme[GBR2]	2013	-	2020	Volume-based R&D tax credit	C, Intangibles	Large firms: 13	-	-
JPN	2000-2016	Incremental-based R&D tax credit[JPN]	1967	2017	2016	Incremental R&D tax credit	C, MED, BD	5	Average R&D spend in previous three years	-
		General type R&D tax credit	2003	-	2016	Volume-based R&D tax credit	C, MED, BD	Large firms: 10, SMEs: 12	-	-

Table A.2: Major Changes in the Main R&D Tax Incentive Design Features Modelled over the Sample Period

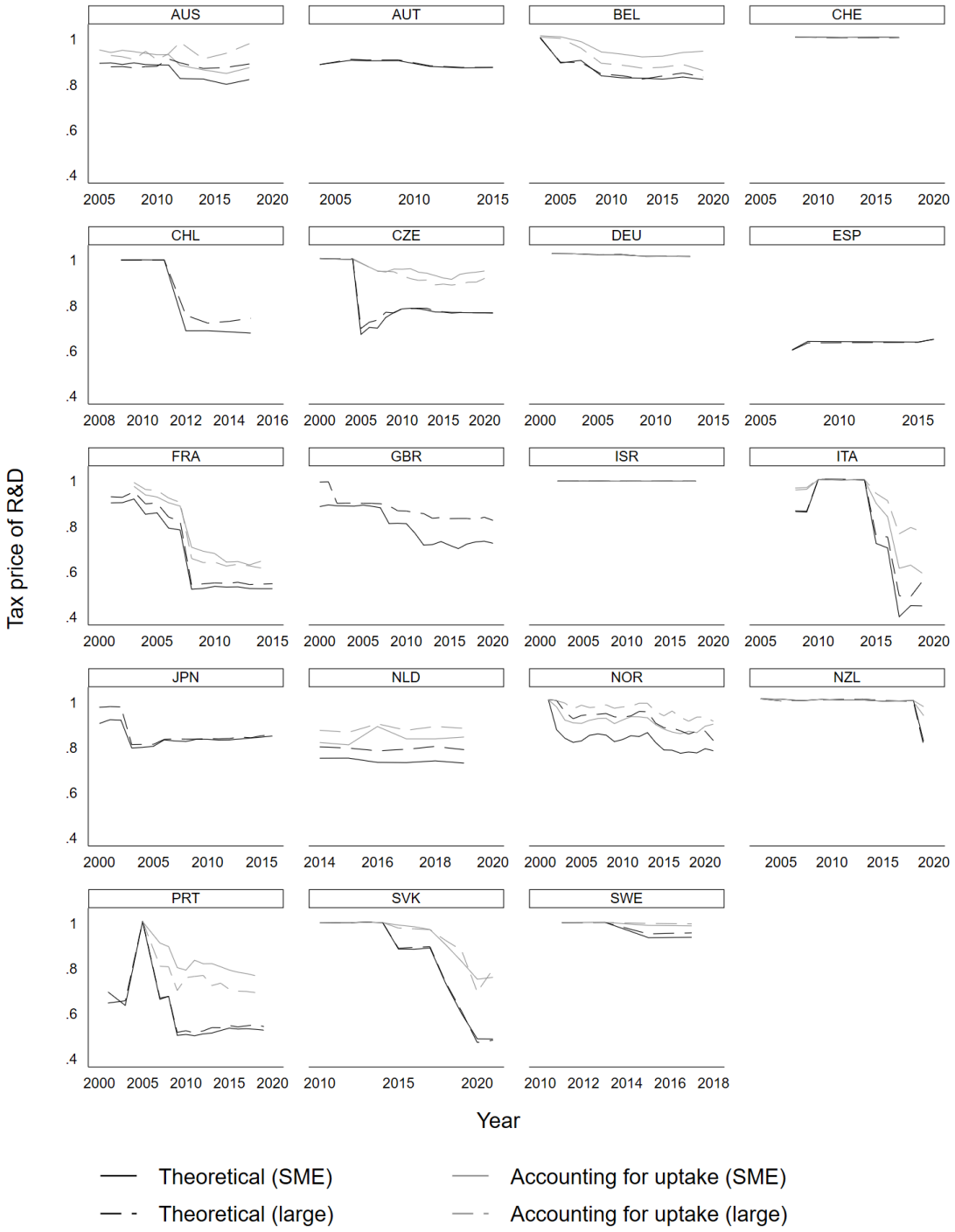
Availability of R&D tax incentives						Major changes in the main R&D tax incentive design features modeled over the sample period				
Country	**Sample period**	**Name of scheme**	**Year introduced**	**Year repealed**	**Last year observation**	**Instrument**	**Eligible R&D expenditures**	**Tax credit/ allowance rate (%)**	**Base amount (if incremental)**	**Limitations (floor, threshold, ceiling)**
Baseline data sample (countries with BERD survey and tax relief microdata										
AUS	2005-2018	R&D tax concession measures	1985	2011	2011	-	-	-	-	Increase in R&D cap from AUD 1 million to AUD 2 million in 2009
		R&D tax incentive	2012	-	2018	-	-	Reduction of tax credit rate from 40 to 38.5 (45 to 43.5 for SMEs) in 2017 (from July 2016)	-	Introduction of R&D cap of AUD 100 million in 2014
BEL	2003-2019	R&D Investment Deduction	1992	-	2019	-	-	Increase in the tax allowance rate from 13.5 to 15.5 in 2010, reduction to 13.5 in 2011, increase to 15.5 in 2013, reduction to 14.5 in 2014 and reduction to 13.5 in 2015.	-	-
		Payroll Withholding Tax Credit	2005	-	2019	-	-	Increase in payroll withholding tax credit rate from 75 to 80 in 2013	-	-
CZE	2000-2021	R&D tax allowance	2005	-	2021	Introduction of incremental component in 2014	-	-	-	-
FRA	2001-2015	R&D tax credit - Crédit d'Impôt Recherche (CIR)	1983	-	2015	Incremental R&D tax credit becomes hybrid in 2004 and entirely volume-based in 2008	-	Introduction of volume-based rate of 5 (incresed to 10 in 2006) and reduction of incremental rate from 50 to 45 in 2004 and 40 in 2006. Introduction of threshold-dependent rates in 2008 (30 below EUR 100 million and 5 above)	-	Increase of R&D cap from EUR 6.1 million to EUR 8 million in 2004, EUR 10 million in 2006, and EUR 16 million in 2007. Removal of upper ceiling and introduction of a threshold of EUR 1000 million with threshold-dependent tax credit rates in 2008. Introduction of upper ceiling on subcontracted R&D of EUR 12 million in 2008.
ITA	2008-2019	R&D tax credit (Law 296/2006)	2006	2009	2009	-	-	-	-	Increase of R&D cap from EUR 15 million to EUR 50 million in 2008.
		R&D tax credit (Law 145/2013, Legge di Stabilità 2015, Budget Law 2017 and 2019)	2015	2019	2019	-	-	Increase of incremental rate from 25 to 50 in 2017 and reduction to 25 for non-labour related R&D costs in 2019	-	Increase of R&D cap from EUR 5 Million to EUR 20 million in 2017 and reduction to EUR 10 million in 2019.
NLD	2014-2019	WBSO	1994	-	2019	-	With the merger of the WBSO and RDA in 2016, the WBSO additionally covers other C (non-labour), ME, B, Intangibles	Reduction of tax credit rate from 35 to 32 below threshold (increase from 14 to 16 above) in 2016. Decrease of tax credit rate above threshold from 16 to 14 in 2018 and increase to 16 in 2019.	-	Increase of threshold from EUR 250k to EUR 350k in 2016.
		RDA	2012	2015	2015	-	-	Increase of tax allowance rate from 40 to 54 in 2013 and 60 in 2014.	-	-
NOR	2001-2021	SKATTEFUNN R&D tax credit	2002^{NOR}	-	2021	-	-	Harmonisation of R&D tax credit rates for SMEs (reduced from 20 to 19) and large firms (increased from 18 to 20) in 2020.	-	Increase of cap on intramural/purchased/total R&D from NOK 4/8/8 million to NOK 5.5/11/11 million in 2009, NOK 8/22/22 million in 2014, NOK 15/33/33 million in 2015, NOK 20/40/40 million in 2016, and NOK 25/50/50 million in 2017. Removal of separate cap on intramural and purchased R&D and reduction of cap on total R&D from NOK 50 million to NOK 25 million in 2020.

Table A.2: Major Changes in the Main R&D Tax Incentive Design Features Modelled over the Sample Period (*continued*)

Availability of R&D tax incentives						Major changes in the main R&D tax incentive design features modeled over the sample period				
Country	**Sample period**	**Name of scheme**	**Year introduced**	**Year repealed**	**Last year observation**	**Instrument**	**Eligible R&D expenditures**	**Tax credit/ allowance rate (%)**	**Base amount (if incremental)**	**Limitations (floor, threshold, ceiling)**
Baseline data sample (countries with BERD survey and tax relief microdata										
NZL	2003-2019	R&D tax credit	2008	2009	2009	-	-	-	-	-
		Research and Development Tax Incentive	2019		2019	-	-	-	-	-
PRT	2001-2019	SIFIDE tax credit I	1997	2003	2003	-	-	-	-	-
		SIFIDE tax credit II	2006	-	2019	-	-	Increase of volume-based rate from 20 to 32.5 in 2009.	-	Introduction of R&D cap on incremental R&D expenses of EUR 1.5 million in 2013.
SVK	2010-2021	R&D tax allowance	2015	-	2021	-	-	Increase of volume-based rate from 25 (50 if labour) to100 in 2018, 150 in 2019 and 200 in 2020. Increase of incremental rate from 25 to 100 in 2018.	Base amount (average R&D spend in previous two years) redefined in 2018[SVK].	-
SWE	2011-2017	Partial exemption of social security contributions[SWE]	2014	-	2017	-	-	-	-	-
Additional countries (with BERD survey microdata) included in extended data sample										
AUT	2004-2015	R&D premium	2002		2015	-	-	Increase of tax credit rate from 8 to 10 in 2011.	-	Increase of R&D cap from EUR 100k to EUR 1 million in 2012.
CHL	2009-2015	R&D tax credit for extramural expenses	2008	2012	2012	-	-	No change in gross tax credit rates. Net tax credit rates changed with the value of corporate income tax rates.	-	-
		R&D tax credit for intramural and extramural expenses	2012	-	2015	-	-	No change in gross tax credit rates. Net tax credit rates changed with the value of corporate income tax rates.	-	-
ESP	2007-2016	R&D&I tax credit[ESP]		-	2016	-	-	Reduction of volume-based rate for C from 27 to 25 (9 to 8 for ME) in 2008, and introduction of enhanced volume-based rate for R&D staff (+17) in 2015. Reduction of incremental rate from 19 to 17 in 2009.	-	-
GBR	2000-2020	R&D tax allowance[GBR1]	2000	-	2020	-	-	Increase of tax allowance rate for SMEs from 50 to 75 (25 to 30 for large firms) in 2008, 100 in 2011, 125 in 2012, and 130 in 2015.	-	Removal of minimum R&D spend of GBP 10k
		Research and Development Expenditure Credit (RDEC) Scheme[GBR2]	2013	-	2020	-	-	Increase of tax credit rate for large firms from 10 to 11 in 2015, 12 in 2018 and 13 in 2020.	-	-
JPN	2000-2016	Incremental-based R&D tax credit[JPN]	1967	2017	2016	-	-	Reduction of the incremental tax credit rate from 15 to 5 in 2006.	-	-
		General type R&D tax credit	2003	-	2016	-	-	Introduction of volume-based tax credit rate of 12 for large firms and increase of the rate for SMEs from 10 to 15 in 2003. Reduction of the tax credit rate for SMEs from 15 to 12 (12 to 10 for large firms) in 2006.	-	-

B Additional Tables and Figures

Figure B.1: **Average B-Index by Country and Firm Size**



Notes: For each country, size category (SME or large) and year, the figure shows the average theoretical B-index and the average B-Index accounting for tax incentive uptake. The average is calculated first across firms in each country-industry-size class cell and then across such cells in each country and size category.

Table B.1: **Sample Years by Country**

Year	**AUS**	AUT	**BEL**	CHE	CHL	**CZE**	DEU	ESP	**FRA**	GBR	ISR	**ITA**	JPN	**NLD**	**NOR**	**NZL**	**PRT**	**SVK**	**SWE**
2000						x				x			x						
2001						x	x		x	x			x		x		x		
2002						x			x	x	x		x		x				
2003			x			x	x		x	x	x		x		x	x	x		
2004		x				x			x	x	x		x		x				
2005	x		x			x	x		x	x	x		x		x	x	x		
2006	x	x				x			x	x	x		x		x				
2007	x	x	x			x	x	x	x	x	x		x		x	x	x		
2008	x			x		x		x	x	x	x	x	x		x		x		
2009	x	x	x		x	x	x		x	x	x	x	x		x	x	x		
2010	x				x	x			x	x	x	x	x		x		x	x	
2011	x	x	x		x	x	x		x	x	x	x	x		x	x	x	x	x
2012	x			x	x	x			x	x	x	x	x		x		x	x	
2013		x	x		x	x	x		x	x	x	x	x		x	x	x	x	x
2014	x				x	x			x	x	x	x	x	x	x		x	x	
2015		x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
2016	x					x		x		x	x	x	x	x	x		x	x	
2017			x	x		x				x	x	x		x	x	x	x	x	x
2018	x					x				x	x	x		x	x	x	x	x	
2019			x			x				x		x		x	x	x	x	x	
2020						x				x					x			x	
2021						x									x			x	

Notes: The table marks with "x" the years in which each country appears in our estimation sample. The countries for which administrative R&D tax relief microdata are available are marked in bold.

Table B.2: **Homogenous R&D Tax Price Elasticities: First Stage**

	Outcome: log B-Index			
	Country-industry		Country-ind.-size class	
	(1) Theoretical	(2) Baseline	(3) Theoretical	(4) Baseline
log B-Index (synthetic)	1.062***	0.661***	1.035***	0.637***
	(0.010)	(0.019)	(0.009)	(0.015)
log value added (t-2)	0.018*	0.045***	0.010	0.047***
	(0.009)	(0.012)	(0.008)	(0.010)
Observations	3504	3504	7273	7273

Notes: *** 1%, ** 5%, * 10%. Columns 1-4 show first-stage results corresponding to second-stage results reported, respectively, in columns 3 and 4 of panel A and columns 3 and 4 of panel B of Table 5. Observations are defined at the country-industry-year level (columns 1-2) or at the country-industry-size class-year level (columns 3-4). Standard errors in parentheses are clustered at the country-industry level (columns 1-2) or at the country-industry-size class level (columns 3-4). In columns 1 and 3, the outcome variable is the average log theoretical B-Index (not accounting for tax incentive uptake) across all R&D-performing firms in a given country and industry or country, industry and size class ($\overline{\log BIndex^{the}}_{ci(s)t}$). In columns 2 and 4, it is the average log of a B-Index accounting for tax incentive uptake ($\overline{\log BIndex}_{ci(s)t}$). The main explanatory variable is the synthetic B-Index ($\overline{\log BIndex}^{syn}_{ci(s)t}$). All regressions control for industry value added lagged by 2 years, country-industry (columns 1-2) or country-industry-size class (columns 3-4) fixed effects and industry-year (columns 1-2) or industry-size class-year (columns 3-4) fixed effects.

Table B.3: **R&D Tax Price Elasticities Controlling for Direct Support**

A: Country-industry level

	Outcome: log R&D expenditure			
	OLS		2SLS	
	(1)	(2)	(3)	(4)
log B-Index (representative firm)	-0.376***			
	(0.060)			
log B-Index (theoretical)		-0.372***	-0.395***	
		(0.063)	(0.066)	
log B-Index (baseline)				-0.634***
				(0.107)
intensity of direct support	1.733***	1.736***	1.734***	1.752***
	(0.239)	(0.240)	(0.239)	(0.230)
log value added (t-2)	0.235***	0.228**	0.232***	0.254***
	(0.087)	(0.088)	(0.087)	(0.089)
Observations	3282	3282	3282	3282
F-stat			10766	1217

B: Country-industry-size class level

	Outcome: log R&D expenditure			
	OLS		2SLS	
	(1)	(2)	(3)	(4)
log B-Index (representative firm)	-0.503***			
	(0.045)			
log B-Index (theoretical)		-0.528***	-0.560***	
		(0.045)	(0.049)	
log B-Index (baseline)				-0.909***
				(0.076)
intensity of direct support	1.759***	1.762***	1.758***	1.788***
	(0.101)	(0.100)	(0.100)	(0.099)
log value added (t-2)	0.195***	0.186***	0.192***	0.229***
	(0.067)	(0.067)	(0.067)	(0.069)
Observations	7273	7273	7273	7273
F-stat			13704	1724

Notes: *** 1%, ** 5%, * 10%. In panel A, observations are defined at the country-industry-year level, and, in panel B, observations are defined at the country-industry-size class-year level. Standard errors in parentheses are clustered at the country-industry level (panel A) or the country-industry-size class level (panel B). The outcome variable is the logarithm of the total intramural R&D expenditure by firms in a given country and industry (panel A) or country, industry and size class (panel B). In column 1 (of each panel), the main explanatory variable is a log of a B-Index calculated for a representative firm in each country-industry ($\log BIndex^{repr}_{cit}$). In columns 2-3, it is the average log theoretical B-Index (not accounting for tax incentive uptake) across all R&D-performing firms in a given country and industry or country, industry and size class ($\overline{\log BIndex^{the}}_{ci(s)t}$). In column 4, it is the average log of a B-Index accounting for tax incentive uptake ($\overline{\log BIndex}_{ci(s)t}$). Regressions in columns 1-2 are estimated by OLS, and regressions in columns 3-4 are estimated by 2SLS, instrumenting for the B-Index variables with the synthetic B-Index ($\overline{\log BIndex}^{syn}_{ci(s)t}$). All regressions control for industry value added lagged by 2 years, country-industry (panel A) or country-industry-size class (panel B) fixed effects and industry-year (panel A) or industry-size class-year (panel B) fixed effects.

Table B.4: **Heterogeneous R&D Tax Price Elasticities: First Stage**

	Outcome: log B-Index			
	(1)	(2)	(3)	(4)
	x large	x medium	x small	x R&D intens.
log B-Index (synthetic)	0.721***	-0.003	0.002	0.022
	(0.021)	(0.006)	(0.007)	(0.015)
log B-Index (synthetic) x medium	-0.051*	0.665***	0.000	-0.014
	(0.028)	(0.019)	(0.001)	(0.023)
log B-Index (synthetic) x large	-0.197***	-0.000	0.518***	-0.089***
	(0.036)	(0.002)	(0.030)	(0.031)
log B-Index (syn.) x R&D-intensive	-0.023	0.002	-0.008	0.634***
	(0.026)	(0.013)	(0.016)	(0.021)
log value added (t-2)	0.047***	0.018***	0.010*	0.019***
	(0.010)	(0.006)	(0.006)	(0.007)
Observations	7273	7273	7273	7273

Notes: *** 1%, ** 5%, * 10%. Columns 1-4 show first-stage results corresponding to second-stage results reported in column 4 of Table 6. Observations are defined at the country-industry-size class-year level, and standard errors in parentheses are clustered at the country-industry-size class level. The outcome variables are based on the average log of a B-Index accounting for tax incentive uptake across all R&D-performing firms in a given country, industry and size class ($\overline{\log BIndex}_{cist}$). All regressions control for industry value added lagged by 2 years, country-industry-size class fixed effects and industry-size class-year fixed effects.

Table B.5: **R&D Tax Price Elasticities: Dropping One Country at a Time**

	Outcome: log R&D expenditure				
	(1)	(2)	(3)	(4)	(5)
Excluded country:	*none*	AUS	BEL	CHE	CZE
log B-Index	-1.901***	-1.907***	-1.974***	-1.889***	-1.638***
	(0.206)	(0.207)	(0.206)	(0.207)	(0.198)
log B-Index x medium	0.291*	0.278*	0.341**	0.273	0.276*
	(0.164)	(0.166)	(0.164)	(0.166)	(0.155)
log B-Index x large	1.064***	1.063***	1.157***	1.038***	0.813***
	(0.212)	(0.212)	(0.212)	(0.214)	(0.198)
log B-Index x R&D intens.	0.762***	0.785***	0.743***	0.766***	0.712***
	(0.193)	(0.194)	(0.194)	(0.193)	(0.180)
Observations	7273	7062	6953	7091	6150
F-stat	87	85	84	86	96
	Outcome: log R&D expenditure				
	(6)	(7)	(8)	(9)	(10)
Excluded country:	DEU	FRA	ISR	ITA	NLD
log B-Index	-2.142***	-2.552***	-1.851***	-1.812***	-1.925***
	(0.222)	(0.302)	(0.208)	(0.293)	(0.208)
log B-Index x medium	0.336**	0.291	0.279*	0.423	0.310*
	(0.166)	(0.193)	(0.166)	(0.346)	(0.168)
log B-Index x large	1.144***	1.111***	1.029***	0.739**	1.094***
	(0.220)	(0.307)	(0.219)	(0.344)	(0.214)
log B-Index x R&D intens.	0.960***	1.326***	0.739***	0.665**	0.785***
	(0.208)	(0.283)	(0.196)	(0.269)	(0.195)
Observations	6783	6337	6967	6406	6961
F-stat	77	69	85	66	86
	Outcome: log R&D expenditure				
	(11)	(12)	(13)	(14)	(15)
Excluded country:	NOR	NZL	PRT	SVK	SWE
log B-Index	-1.531***	-1.871***	-1.751***	-2.026***	-1.895***
	(0.208)	(0.204)	(0.214)	(0.212)	(0.207)
log B-Index x medium	0.266	0.201	0.242	0.358**	0.285*
	(0.167)	(0.164)	(0.159)	(0.167)	(0.165)
log B-Index x large	1.121***	0.994***	1.204***	1.140***	1.070***
	(0.226)	(0.212)	(0.201)	(0.211)	(0.213)
log B-Index x R&D intens.	0.410**	0.755***	0.651***	0.856***	0.758***
	(0.196)	(0.193)	(0.208)	(0.196)	(0.194)
Observations	6124	7104	6443	7058	7110
F-stat	75	85	76	81	86

Notes: *** 1%, ** 5%, * 10%. Observations are defined at the country-industry-size class-year level, and standard errors in parentheses are clustered at the country-industry-size class level. The outcome variable is the logarithm of the total intramural R&D expenditure by firms in a given country, industry and size class. Explanatory variables are based on the average log of a B-Index accounting for tax incentive uptake across all R&D-performing firms in a given country, industry and size class ($\overline{\log BIndex}_{cist}$). All regressions are estimated by 2SLS, instrumenting for the B-Index-based explanatory variables with corresponding variables based on the synthetic B-Index ($\overline{\log BIndex}^{syn}_{cist}$). All regressions control for industry value added lagged by 2 years, country-industry-size class fixed effects and industry-size class-year fixed effects. Each regression excludes one country (marked in the column header) from the sample.