

2017 OECD R&D tax incentive country profiles^{1,2}

General and country-specific notes on the B-index calculation (Figure 2)

OECD time-series estimates of implied marginal R&D tax subsidy rates based on the B-index

General notes

- This is an experimental indicator based on quantitative and qualitative information representing a notional level of tax subsidy rate under different scenarios. It requires a number of assumptions and calculations specific to each country. International comparability may be limited.
- The tax subsidy rate is calculated as 1 minus the B-index, a measure of the before-tax income needed to break even on USD 1 of R&D outlays ([Warda, 2001](#)). It is based on responses from national finance/tax/innovation authorities and R&D statistical agencies to the OECD R&D tax incentive surveys varied out from 2007-2017 (biannually: 2007-2015, annually: 2015-2017) and also draws on other publicly available information.
- As a measure of the marginal cost of R&D to users, the B-index is estimated based on marginal, headline R&D tax credit (allowance) rates. Figures refer to “representative” firms in their class for which caps or ceilings that limit the amount of eligible expenditures or tax support are assumed not to be binding. The implied marginal tax subsidy rates, calculated based on headline R&D tax credit (allowance) rates, provide an upper bound value of the generosity of R&D tax incentives, not reflecting the effect of thresholds and ceilings that may limit the amount of qualifying R&D expenditure or value of R&D tax relief.
- Estimates allow for differences in the treatment of the various components of R&D expenditures: current (labour, other current) and capital (machinery and equipment, facilities/buildings) expenditures. A common 60:30:5:5 percentage distribution of labour, other current, machinery and equipment, and building expenditures is applied based on average estimates for OECD countries (www.oecd.org/sti/rds).
- Benchmark tax data information, including statutory corporate income tax rates (non-targeted and small business corporate income tax rates), is obtained from the OECD Tax Database, May 2017, and public sources for non-OECD countries. The model accounts for targeted, SME-specific corporate income tax rates in Australia, Brazil, Canada, Hungary, Japan, Korea and the Netherlands.
- Expenditures on capital assets used for R&D are depreciated over their useful life, using a straight-line or declining balance depreciation method, as applicable. Estimates of the net present value of provisions relating to R&D capital expenditures draw on information about the benchmark tax treatment of capital expenditures, as collected through the OECD-NESTI questionnaire on R&D tax incentives, and the OECD Centre for Tax Policy and Administration questionnaire on the tax treatment of the creation, acquisition and use of knowledge capital. Estimates of tax subsidy rates are

¹ This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

² The Statistical data for Israel are supplied by an under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

fairly robust to different choices of sources and methodologies because of the small weight of this component in eligible R&D expenditures.

- R&D tax allowances are deducted from taxable income, while R&D tax credits are applied against corporate income tax payable (as is the case for payroll withholding tax incentives and wage taxes). R&D tax benefits are taxable in Australia, Canada, Chile, the United Kingdom (Above-the-line tax credit for large enterprises) and the United States. Exemptions of payroll withholding tax and social security contributions are effectively taxable as they reduce the amount of expenditure deductible from taxable income.
- The model focuses on tax relief from central government and excludes incentives related to personal income, value added, property taxes, as well as taxes on wealth and capital and other forms of direct government support (grants and subsidies). Some countries remove in part or in full R&D expenditures funded through grants. These differences have not been modelled in the calculations.
- The B-index for the profit scenario assumes that the “representative firm” generates a sufficiently large profit to achieve the incentive’s full potential benefit. An adjusted B-index is reported for a loss-making firm that is unable to claim tax benefits in the reporting period, using an adjusted effective tax rate that takes into account refundability and carry-forward provisions.
- Refunds are generally modelled as immediate and full payment of tax incentive claims unless excess claims are payable over time and require discounting. Carry-forwards are modelled as discounted options to claim the incentive in the future, assuming a constant annual probability of returning to profit of 50% and a nominal discount rate of 10%.
- For simplicity, loss-making firms are assumed to enjoy an infinite carry-forward of standard deductions of current R&D expenditures and depreciation expenses arising from the use of machinery, equipment and buildings in R&D, unless expenditures are refundable.
- The definitions of SMEs and large firms vary across countries and may also vary over time. In some countries, (e.g. Belgium, France, the Netherlands, Portugal, Spain and the United States), special tax incentive provisions are available for young innovative firms, start-ups and innovative SMEs, as a subgroup of the SME population. The R&D tax incentive country profiles present tax subsidy rates for large firms and SMEs. SME subgroup-specific B-indices are not included in these profiles.
- Time-series B-index estimates are not included for Bulgaria, Cyprus, Croatia, Estonia, Israel, Malta, Turkey and the Russian Federation, and for Greece for the years 2004-17 only as insufficient detail was available in order to carry out calculations for representative firms in the relevant categories.

Country-specific notes

Country	Notes on modelling of R&D tax incentive provisions and design parameters
Australia	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2011: R&D Tax Concession (an enhanced R&D tax allowance rate of 50% applies to incremental R&D expenditure on top of the 25% volume-based tax allowance from 2002-11). • 2012-2017: R&D Tax Incentive <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • A 175% International Premium incremental tax concession for additional investment in 'foreign-owned' R&D (available as of 1 July 2007) • Ceilings and floors are assumed to be non-binding.
Austria	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2001: R&D tax allowances • 2002-2017: R&D premium <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • 2002-2011: R&D tax allowance (abolished with effect of 2011) • Ceiling on subcontracted R&D expenditure assumed to be non-binding.
Belgium	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2006: Investment deduction (continued to be available) • 2005-2017: Payroll withholding tax credit. The PWTC reduces R&D wage cost by 20% based on a 2011 estimate provided by the Belgian Science Policy Office (15-20% wage cost reduction at an exemption rate of 75%).The same assumption applies after the increase in the PWTC exemption rate to 80%. • 2006-2017: R&D tax credit (introduced in 2006; alternative to investment deduction) • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • PWHT offsets are assumed not to be limited by the tax liability of the corresponding tax period.
Brazil	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2006-2017: R&D tax allowance; for SMEs, targeted CIT rates are assumed to apply (firms with a net income below 240 000 Brazilian real - about USD 130 000 - are exempt from a 10% CIT surcharge). • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • The R&D tax allowance rate may increase from 60% up to 100% depending on the R&D staff growth and patent/cultivar registration: 70% for an increase of up to 5% in R&D staff; 80% for an increase of more than 5% in R&D staff; extra 20% deduction for qualifying costs incurred in developing a patent or cultivar (allowed when patent/cultivar is registered).
Canada	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: Scientific Research and Experimental Development (SR&ED) tax credit established by the federal government in Canada in 1986. For SMEs, estimates describe the position of Canadian-controlled private corporations (CCPCs) which are eligible for an enhanced, fully refundable tax credit rate of 35% up to an expenditure ceiling of CAD 3 million. • 2000-2014: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • It is assumed that the expenditure ceiling of CAD 3 million (CAD 2 million prior to 2008) is not binding. • Provincial R&D tax incentives have not been modelled.
Chile	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2008-2011: Tax credit for extramural R&D. Extramural assumed to be 10% of current expenditure for SMEs and 15% for large firms. • 2012-2017: Tax credit for intramural and extramural R&D • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Ceilings and floors are assumed to be non-binding.
China	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2008-2017: R&D tax allowance • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p>

	<ul style="list-style-type: none"> • Ceiling on subcontracted R&D assumed to be non-binding.
Czech Republic	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2005-2017: R&D tax allowance (incremental component modelled from 2014 onwards). <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Expansion of qualifying expenses to include external services related to R&D provided by public R&D institutions (such as universities and research institutes), effective January 2014.
Denmark	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2012-2017: Tax credit for deficit-related current R&D tax expenditures. • 2000-2017: Accelerated depreciation of R&D capital assets. <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Ceilings are assumed to be non-binding.
France	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: Crédit d'Impôt Recherche (CIR). A tax credit rate of 30% applies to eligible R&D expenditures up to EUR 100 million (5% above this threshold). This threshold is assumed to be non-binding in the case of both SMEs and large companies. • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Since 2006: The wages of researchers with a Ph.D. or equivalent degree and unlimited employment contract (young doctors) count twice for R&D tax credit purposes during the first 12 months following their first recruitment. • Since 2008: Expenses incurred in work contracted to public-sector research bodies count double for research tax credit purposes. • 2008-2012: The 30% rate is increased to 50% (first year) and 40% (second year) for firms claiming tax credit for the first time (reduced to 40% and 35% in 2011). • SSC exemption for young innovative enterprises (JEIs) or young university enterprises (JEUs), available since 2004 and 2008 respectively. • Ceilings on subcontracted R&D and R&D expenditure threshold for enhanced credit rate are assumed to be non-binding (CIR). PWHT offsets are assumed not to be limited by the tax liability of the corresponding tax period.
Hungary	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: R&D tax allowance • 2013-2017: SSC exemption (In period 2013-2016: 28.5% for researchers, 14.5% for Ph.D. students since 2014; in year 2017: 23.5% for researchers, 12.5% for Ph.D. students); weighted to account for share of R&D expenditure attributable to researchers vs. PhD students) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Collaboration agreements with higher education institutions, the Hungarian Academy of Sciences or research institutions established by them (300% R&D tax allowance rate). • Development tax incentive for acquisitions of intangible assets, machinery and equipment and buildings used for R&D purposes. • R&D tax credit in innovation contribution, 2004-11 • R&D tax allowance in innovation contribution, 2010-15 • R&D tax credit on wages of researchers (10%), 2005-14 • Ceilings are assumed to be non-binding (SSC exemption). PWHT offsets are assumed not to be limited by the tax liability of the corresponding tax period.
Iceland	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2011-2017: R&D tax credit <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Floor and ceilings on intramural and extramural (purchased or collaborative R&D) R&D expenditures are assumed to be non-binding.
Ireland	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2004-2017: R&D tax credit (2004-14: incremental; 2015-17: volume-based); the incremental tax credit available in 2004-14 is modelled as a volume-based tax credit provided at a rate of as 25% (20% in 2004-2008), where by weights are applied that reflect the share of eligible R&D spending above the 2003 base year expenditure for SMEs and large firms in each year. These weights, based on Revenue Commissioner data, account for the amount of allowed R&D expenditure without reference to the base year criterion in 2012 (EUR 100k), 2013 (EUR 200k) and 2014 (EUR 300k). The first EUR spend on R&D qualified for the credit on a full volume basis up to these limits in 2012-14. A refund in three annual instalments is modelled. • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • An infinite carry-forward and a one-year carry back provision are not modelled.

	<ul style="list-style-type: none"> The ceiling on the amount of subcontracted R&D as a percentage of total qualifying R&D expenses is assumed to be non-binding.
Italy	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> 2007-2011: R&D tax credit (volume-based) 2015-2017: R&D tax credit (incremental). Base amount defined as average R&D investment cost in the 2012 - 2014 period (modelled as three year average as an approximation) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> 2000-2014: R&D tax credits (fixed amount on qualified researchers, 60% R&D collaboration, abolished 2014), L.449/1997, and regional incentives 2007-2011: R&D tax credit (volume-based): an enhanced tax credit rate of 40% for R&D collaborations with universities or public research organisations 2011: An incremental R&D tax credit of 90% is established on an experimental basis for the tax years 2011-12 for R&D collaborations with universities or public research organisations. This rate is applicable to incremental R&D expenditures in excess of the average R&D investment over the 2008-2011 period 2012-2014: Volume-based tax credit of 35% for R&D wages (up to EUR 200k per year and enterprise). Firms are eligible if permanently hiring (i) PhD holders from an Italian or recognized foreign university and (ii) Master degree holders (technical or scientific subject) employed in R&D 2015-2016: R&D tax credit (incremental): an enhanced rate of 50% applies for (i) R&D collaborations with universities and public research institutions, (ii) innovative start-ups and (iii) research wages for highly qualified staff (with a Master or doctoral degree). Ceilings and floors are assumed to be non-binding.
Japan	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> 2000-2003: R&D tax credit- volume-based for SMEs at a rate of 10% and incremental for large and SMEs at a rate of 15%. 2003-2005: R&D tax credit (volume-based); for large firms, a volume-based credit rate of 10% is assumed (the rate varies between 10-12%), and for small firms, a 12% volume-based tax credit rate is adopted. R&D tax credit (incremental) still applies at a rate of 15%. 2006-2016: R&D tax credit (hybrid); for large firms, a volume-based credit rate of 10% is assumed (the rate varies between 8-10%), and for small firms, a 12% volume-based tax credit rate is adopted. The incremental tax credit rate that applies is reduced to 5% during the period. 2015-2016: An enhanced tax credit rate of 5% is adopted conservatively for the incremental credit as a lower bound in the absence of information on the rate of R&D growth (increment) which determines the size of the incremental tax credit rate (capped at 30%). 2017: As a provisional measure until the FY2018, the volume-rate of relief can range from 12-17% for SMEs and from 6-14% for large firms. The rate of 14% and 17% was used for modelling large firms and SMEs respectively. <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> 2003-2017: The special rates provisioned for collaborative R&D are not modelled. 2008-2017: the more complex "high R&D intensity" tax credit (alternative to the incremental R&D tax credit until 2016) 2015-2017: volume-based tax credit ("Open innovation activity-based R&D tax credit") for cooperative R&D with national R&D institutes (30%) or other non-public corporations (20%) Ceilings are assumed to be non-binding.
Korea	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> 2000-2017: Hybrid tax credit for research and human resource development <ul style="list-style-type: none"> Volume-based component modelled for SMEs. Incremental component modelled for large companies. 2000-2017: Tax credit for investment in research and test facilities, training facilities and facilities for commercializing new technology <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> 2015-2017: Positions of firms losing SME status (reduced volume-based rate of 15% for current R&D expenditure in the first three taxable years following loss of SME status and 10% in the subsequent two tax years) 2013-2017: Positions of the so-called "high potential enterprises" (enhanced volume-based tax credit rate compared to large enterprises) 2010-2017: the Growth Industry and Basic Technology tax credit (enhanced volume-based rate of 20% - 30% for large firms and HPE and 30% for SMEs - for R&D expenses for new growth engine industries and source technologies) Ceilings are assumed to be non-binding.
Latvia	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> 2014-2017: R&D tax allowance
Lithuania	<p><i>R&D tax incentives:</i></p>

	<ul style="list-style-type: none"> • 2008-2017: R&D tax allowance • 2008-2017: Accelerated depreciation provision for R&D capital assets
Mexico	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2001: R&D tax credit (incremental, available 1998-2001) • 2002-2008: R&D tax credit (volume-based) • 2017-: R&D tax credit (incremental). Introduced in 2017. <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Ceilings are assumed to be non-binding.
Netherlands	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: Payroll withholding tax credit (WBSO) • 2012-2015: R&D tax allowance (RDA, merge with WBSO in 2016) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • 2001-2017: Payroll withholding tax credit (WBSO) – enhanced tax credit rates for start-ups • Ceilings and thresholds are assumed to be non-binding. PWITH offsets are assumed not to be limited by the tax liability in the corresponding tax period.
New Zealand	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2008: R&D tax credit • 2015-2017: R&D tax credit (deficit) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • Ceilings are assumed to be non-binding.
Norway	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2002-2017: R&D tax credit (Skattefunn) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • The annual limitations for in-house R&D, R&D subcontracted to approved institutions and for total qualifying R&D expenditure (sum of own and purchased R&D) are assumed to be non-binding.
Portugal	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2003/2006-2017: R&D tax credit (hybrid); operating expenditures qualify up to a level of 55% of R&D wage expenditure (50% of the share of other current costs is assumed to qualify). <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • 2007-2017: Enhanced volume-based tax credit rates for start-ups (firms which have not yet completed two exercises and are not benefitting from the incremental rate set) • Ceilings are assumed to be non-binding.
Romania	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2010-2017: R&D tax allowance • 2010-2017: Accelerated depreciation for R&D capital assets
Slovak Republic	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2015-2017: R&D tax allowance (hybrid) <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • 2010-2017: R&D tax allowance for incentive recipients.
Slovenia	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2008-2017: R&D tax allowance
Spain	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: R&D tax credit (hybrid) • 2000-2017: Accelerated depreciation for R&D capital assets <p><i>Provisions/features not modelled:</i></p> <ul style="list-style-type: none"> • 2000-2017: Additional bonus (enhanced volume-based credit rate) for staff exclusively dedicated to R&D • 2007-2012/2013-2017: Exemption of employer social security contributions for qualified R&D staff (fully compatible with the R&D tax credit only in the case of innovative SME). • Ceilings are assumed to be non-binding.
United Kingdom	<p><i>R&D tax incentives:</i></p> <ul style="list-style-type: none"> • 2000-2017: R&D tax allowance (2000-17 for SMEs, 2002-2012 for large enterprises). • 2013-2017: Research and Development Expenditure Credit (RDEC) for large enterprises (initially optional and fully replacing the large company tax allowance scheme in April 2016) • 2000-2017: Accelerated depreciation provision for R&D capital. <p><i>Provisions/features not modelled:</i></p>

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- Ceilings are assumed to be non-binding.

United States*R&D tax incentives:*

- 2000-2017: Regular research credit (RRC)
- 2000-2008: Alternative Incremental Research Credit (AIRC, available 1997-2008)
- 2006-2017: Alternative simplified credit (ASC)

A weighted average of the RRC, AIRC and ASC B-indices is calculated, using IRS SOI data (IRS, 2017) on the credits' respective shares in total qualified R&D expenditures each year as weights (2001 weights apply in 2000-01 and 2013 weights apply in 2013-16 as the most recent weight available). The calculation accounts for RRC claims subject to the excess base (20% marginal tax credit rate) and 50% current R&D expenditure limitation (10% marginal tax credit rate) and the share of qualified R&D that is neither eligible under the RRC nor AIRC/ASC (0% marginal tax credit rate). Estimates model 20-year carry-forward provisions and a refund option for SMEs from 2016 onwards.

Provisions/features not modelled:

- 2000-2017: Credit for basic research conducted in universities and certain non-profit research organisations
- 2005-2017: Credit for energy research
- A one-year carry back provision is not modelled.
- Ceilings are assumed to be non-binding.

Source: OECD, R&D Tax Incentives Database, <http://oe.cd/rdtax>, April 2018.