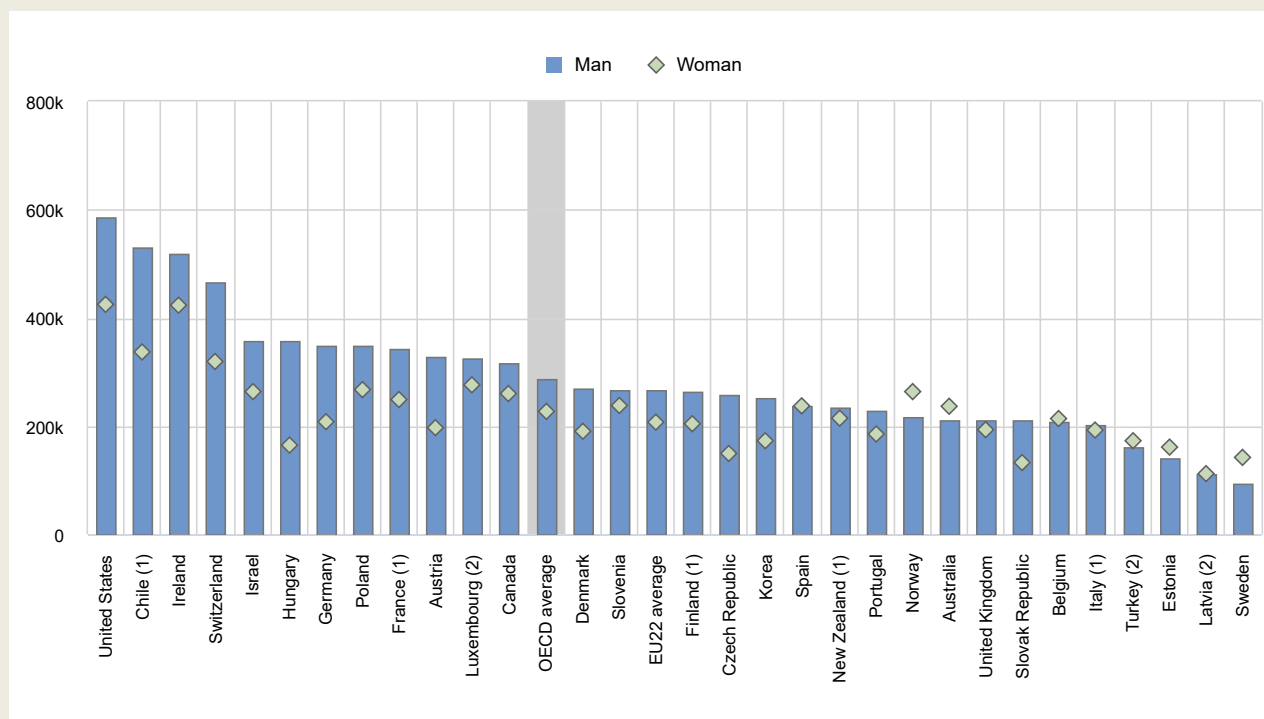


Indicator A5. What are the financial incentives to invest in education?

Highlights

- Adults who complete tertiary education benefit from positive financial returns over their working-age life because they are more likely to be employed and to earn more than those without this degree.
- Investing in tertiary education also pays off in the long run for the public sector, since tertiary-educated adults pay higher income taxes and social contributions.
- On average across the OECD, a man or a woman can expect to receive around USD 7 for each USD they invested in tertiary education, but women tend to have lower foregone earnings (therefore lower total costs) and lower total benefits than men.

Figure A5.1. Private net financial returns for a man or a woman attaining tertiary education (2018)
Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP




Note: Future costs and benefits are discounted at a rate of 2%.

1. Year of reference differs from 2018. Refer to the source table for more details.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

Countries are ranked in descending order of the private net financial returns of a tertiary education for a man.

Source: OECD (2021), Tables A5.1 and A5.2. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

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Context

Investing time and money in education is an investment in human capital. Better chances of employment (see Indicator A3) and higher earnings (see Indicator A4) are strong incentives for adults to invest in education and postpone employment. Although women currently have higher levels of education than men on average (see Indicator A1), men enjoy better employment and earning outcomes from education, on average.

Countries benefit from having more highly educated individuals through higher revenues from the taxes and social contributions paid by those individuals once they enter the labour market. As both individuals and governments benefit from higher levels of educational attainment, it is important to consider the financial returns to education alongside other indicators, such as access to and completion of higher education (see Indicator B5).

Other factors not reflected in this indicator also affect the returns to education. Financial returns may be affected by the field of study and by the specific economic, labour-market and institutional context in each country, as well as by social and cultural factors. Furthermore, returns to education are not limited to financial returns, but also include other economic outcomes, such as increased productivity, and social outcomes, such as health or well-being (see Indicator A6).

Other findings

- In most OECD countries, the main cost of education for individuals are not direct payments, such as tuition fees and living expenses, but the earnings that individuals forego while they are in education. These vary substantially by gender and across countries, depending on the length of education, overall earning levels, differences in earnings across levels of educational attainment and students' earnings.
- For governments, direct costs (such as public expenditure on educational institutions and student grants) represent the largest share of the total public costs of education (composed of these direct costs and foregone taxes on earnings). Since the direct costs are the same for men as for women, total public costs are also quite similar for men and women.
- For all countries with available data, the private and public net financial returns from obtaining a bachelor's, master's or doctoral or equivalent degree are greater than from obtaining a short-cycle tertiary degree.

Note

This indicator provides information on the incentives to invest in further education by considering its costs and benefits, including net financial returns and internal rates of return. It examines the choice between pursuing higher levels of education and entering the labour market, focusing on two scenarios: 1) investing in upper secondary education versus entering the labour market without an upper secondary qualification; 2) investing in tertiary education versus entering the labour market with an upper secondary qualification.

It considers two types of investors: 1) individuals (referred to here as "private") who choose to pursue higher levels of education and the additional net earnings and costs they can expect; and 2) governments (referred to here as "public") that decide to invest in education and the additional revenue they receive (e.g. as tax revenues) and the costs involved.

This indicator estimates the financial returns on investment in education only up to a theoretical retirement age of 64 and therefore does not take pensions into account. The direct costs of education presented in this indicator do not take into account student loans. The results presented in the tables and figures of this indicator are calculated using a discount rate of 2%, based on the average real interest on government bonds across OECD countries.

Analysis

Financial incentives for individuals to invest in tertiary education

Private net financial returns are the difference between the costs and benefits associated with attaining an additional level of education. In this analysis, the costs include the direct costs of attaining education and foregone earnings, while the benefits correspond to earnings from employment after paying income taxes and social contributions (see *Definitions* section). Another way to analyse returns to education is through the internal rate of return, which is the real interest rate that would equalise the costs and benefits, leading an investment to break even. It can be interpreted as the interest rate on the investment made on a higher level of education that an individual can expect to receive every year during their working-age life. The financial incentives to invest in education can also be expressed as total benefits relative to total costs (benefit-cost ratio). This is expressed as the financial benefit of attaining an additional level of education for each USD invested in it. Depending on which measure is used, the relative incentives to invest in additional educational attainment differ between men and women.

Adults completing a higher level of education benefit from positive financial returns over their working-age life. The gains associated with a higher level of education that individuals can expect to receive over their career exceed the cost they bear during their studies. This is true for tertiary education, but it also holds for upper secondary education. On average across OECD countries, the financial returns from tertiary education are about 1.5 times higher than the returns from upper secondary education for both men and women (Table A5.1. , Table A5.2, and Tables A5.7 and A5.8 available on line).

Investing in tertiary education pays off in the long run for both men and women. On average across the OECD, the private financial returns to tertiary education are USD 287 200 for a man and USD 226 800 for a woman. The private net financial returns to tertiary education is higher for a man than it is for a woman in most OECD countries, although younger women (25-34 year-olds) are more likely than younger men to complete tertiary education (see Indicator A1). This is partially related to the fact that the gap in earnings and employment between upper secondary and tertiary education is higher for women than it is for men. The only countries where women have higher private financial returns than men are Australia, Belgium, Estonia, Norway, Spain, Sweden and Turkey (Figure A5.1).

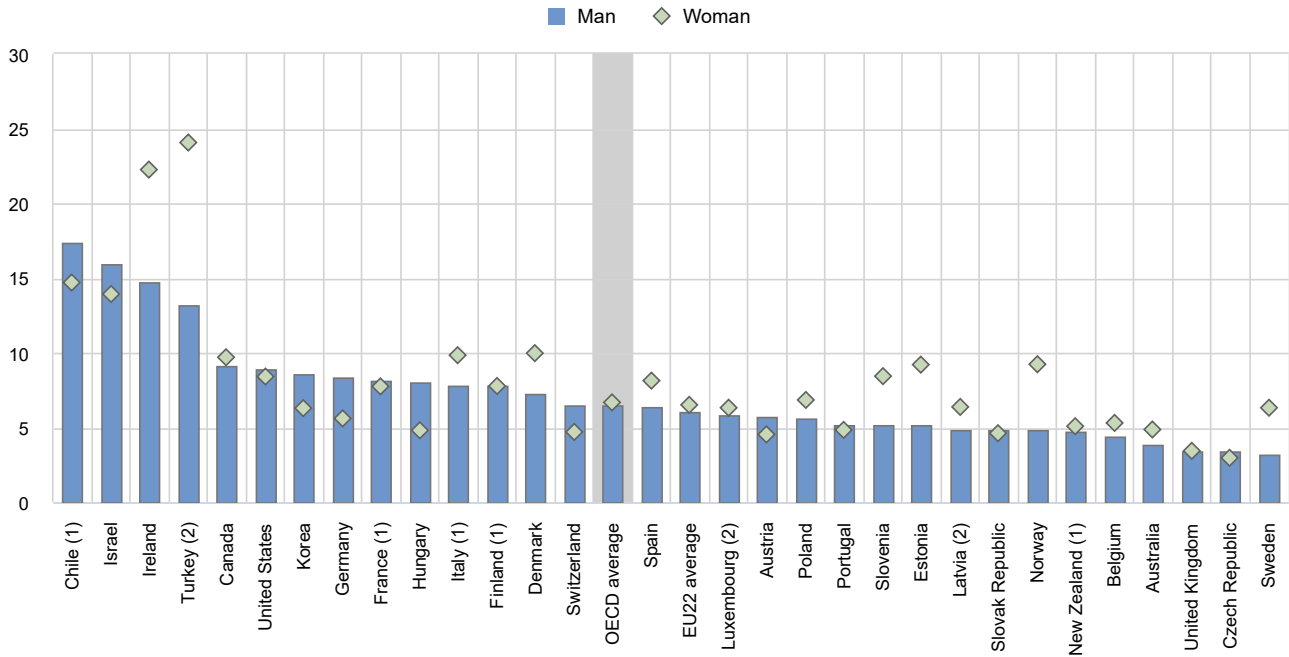
Across OECD countries, the average internal rate of return to tertiary education is 15% for men and 19% for women, below the average internal rate of return to upper secondary education (25% for men and 36% for women). The lower internal rate of return to tertiary education compared to upper secondary education is due to the higher total costs of attaining tertiary education (Table A5.1 and Table A5.2, and Tables A5.7 and A5.8, available on line).

Another way to analyse returns to education is through the benefit-cost ratio, expressed as the private financial benefit of attaining an additional level of education for each USD invested in it. Across OECD countries, the average private financial benefit for each USD invested in tertiary education is around USD 6 for a man and USD 7 for a woman, although women receive lower private net financial returns than men from tertiary education (Figure A5.2). This is due to the fact that, on average, women's total costs and total benefits represent a similar proportion of men's total costs and total benefits (Figure A5.3).

The total costs of attaining tertiary education vary across countries, and there are considerable gender differences. Turkey has the lowest total costs for both men and women (USD 13 200 for a man and USD 7 500 for a woman), while Switzerland has comparably high costs for both men and women (USD 85 100 and USD 86 600, respectively). This represents the highest costs for a woman across all countries with available data. The Czech Republic has the highest costs for a man (USD 109 500) (Figure A5.3). Note that these figures have been adjusted for purchasing power parity (PPP) and therefore they provide a comparable measure of the financial effort that individuals in different countries must make to finance their education, relative to their ordinary cost of living. Because figures have been PPP-adjusted, nominal exchange rates have already been accounted for. For instance, even though the currency used in Sweden is relatively stronger (in terms of nominal exchange rates) than the currency in Chile, paying for tertiary education in Chile entails a greater financial effort relative to the ordinary cost of living than it does in Sweden. In terms of PPP-adjusted total costs of investing in tertiary education, the United States is the country where individuals make the greatest financial effort to finance their education (total costs of investing in tertiary education), relative to their ordinary cost of living (Table A5.1. and Table A5.2). These differences can be understood in light of the different higher education funding policies in place in different countries, whereby states provide varying degrees of public support to higher education.

Figure A5.2. Private financial benefits for each equivalent USD invested in tertiary education for a man or a woman (2018)

Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP



Note: Future costs and benefits are discounted at a rate of 2%.

1. Year of reference differs from 2018. Refer to the source table for more details.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

Countries are ranked in descending order of the private total benefits for each equivalent USD invested in tertiary education for a man.

Source: OECD (2021), Tables A5.1 and A5.2. See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

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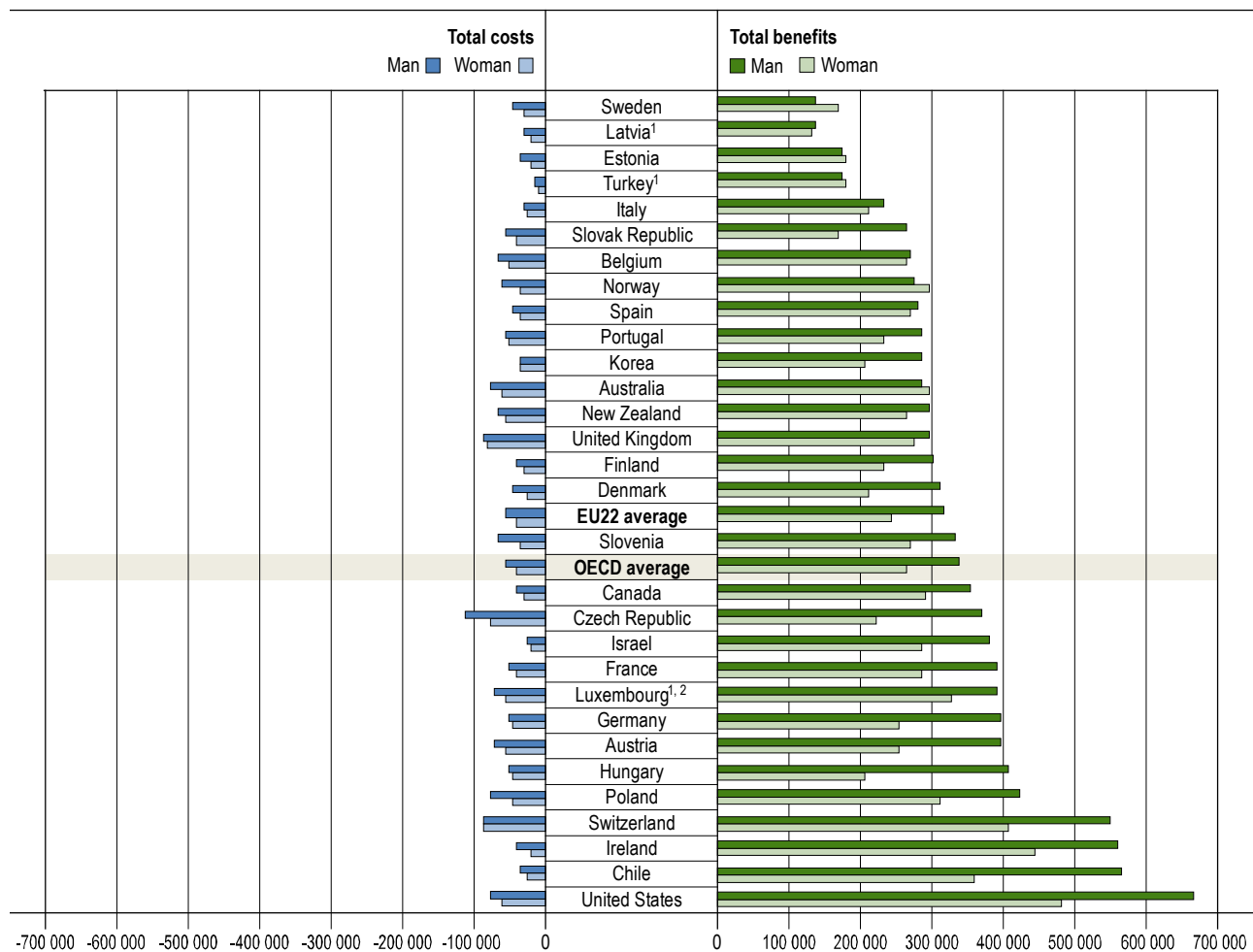
On average across OECD countries, the direct costs of tertiary education amount to USD 10 000 for both men and women, which is more than three times the direct costs of upper secondary education. The direct costs are particularly high in the United Kingdom and the United States: tuition fees and living expenses during tertiary education amount to more than USD 40 000 (USD 40 200 in the United States and 53 600 in the United Kingdom) and exceed foregone earnings, although even in these countries, the earnings advantage associated with tertiary education compensates for the costs. In most OECD countries, however, the main costs of tertiary education are still foregone earnings. The average foregone earnings for attaining tertiary education are about USD 42 900 for a man and USD 30 000 for a woman (Table A5.1. and Table A5.2).

As for total costs, the total benefits from tertiary education are also higher for a man than for a woman. On average across the OECD, they are about USD 340 100 for a tertiary-educated man and only USD 266 800 for a tertiary-educated woman. Australia, Estonia, Norway, Sweden and Turkey are the only OECD countries where women enjoy higher total benefits from tertiary education than men (Figure A5.3).

Further education yields higher gross earnings benefits over an individual's career. Across OECD countries, the average gross earnings benefits are USD 534 600 for a tertiary-educated man and USD 389 400 for a tertiary-educated woman compared with their peers with upper secondary attainment. Countries' tax and social benefit systems also have an impact on the benefits of attaining tertiary education. Income taxes and social contributions account for the lowest share of the benefits in Chile and Korea (less than one-fifth of the gross earnings benefits), while in Belgium and Italy (for men only) they account for more than half (Table A5.1. and Table A5.2).

Figure A5.3. Private costs and benefits for a man or a woman attaining tertiary education (2018)

Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP

**Note:** Future costs and benefits are discounted at a rate of 2%.

1. Only net earnings are available and the calculations use these values as if they were gross earnings.

2. Year of reference differs from 2018. Refer to the source table for more details.

Countries are ranked in ascending order of total private benefits for a man attaining tertiary education.

Source: OECD (2021), Tables A5.1 and A5.2. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).StatLink  <https://stat.link/us3oia>

Financial incentives for governments to invest in tertiary education

Higher levels of educational attainment also lead to higher returns for the public sector. On average across the OECD, the public net financial returns for attaining tertiary education is about USD 127 000 for a man and USD 60 600 for a woman. The net financial returns on investment for governments are generally closely related to the private net returns: those countries where individuals benefit the most from pursuing tertiary education are also those where governments gain the largest returns. For tertiary education, this is the case for men in Ireland and the United States, countries with very large net private and public returns for tertiary education (Figure A5.1. and Figure A5.4).

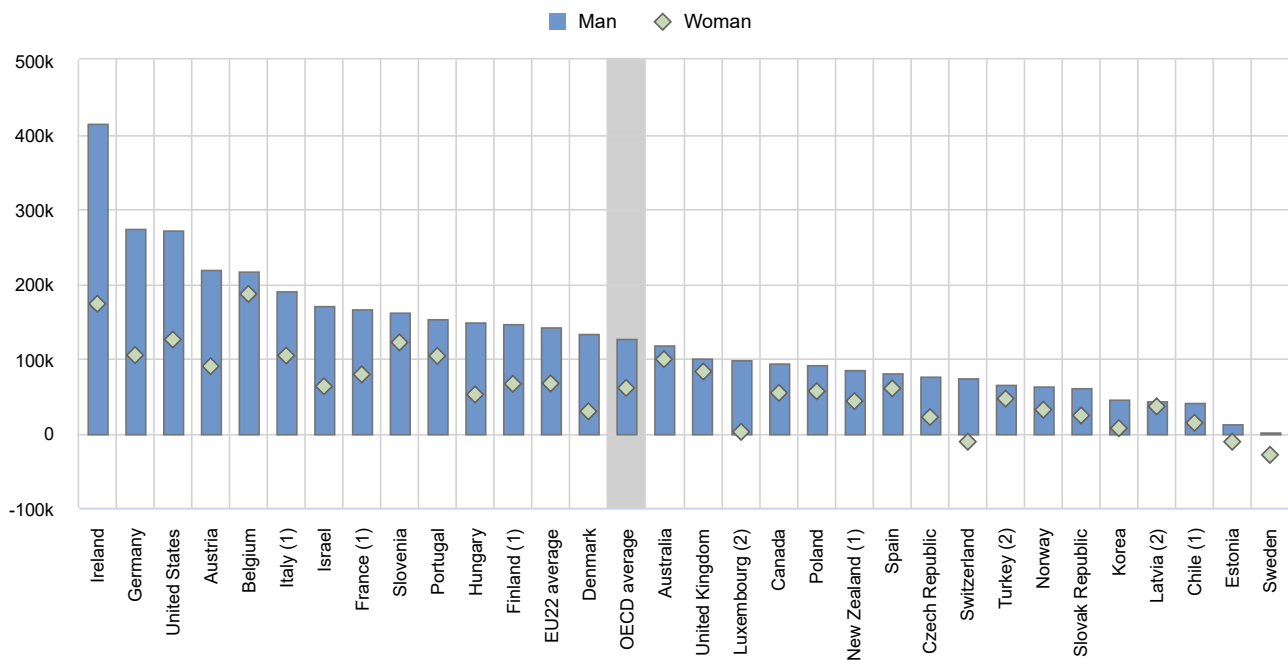
As for private financial returns, public financial returns can be also analysed through the internal rate of return, which equalises the costs and benefits related to educational investment. On average across the OECD, the internal rate of return from tertiary education to governments is 8% for a man and 6% for a woman (Table A5.4).

Public net financial returns are based on the difference between the costs and benefits associated with an individual attaining an additional level of education. In this analysis, the costs include direct public costs for supporting education and foregone taxes on earnings, while the benefits are calculated using income tax and social contributions (see *Definitions* section).

Across OECD countries, the average total costs of tertiary education for governments amount to USD 67 500 for a man and USD 62 000 for a woman. Direct costs (including student grants) represent the largest share of the total public cost of tertiary education, even though student loans are not taken into account in this indicator (Table A5.3 and Table A5.4). This is particularly true in countries such as Denmark, Finland and Norway, where students pay no tuition fees and have access to generous public subsidies for higher education (see Indicator C5).

Figure A5.4. Public net financial returns for a man or a woman attaining tertiary education (2018)

Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP



Note: Future costs and benefits are discounted at a rate of 2%.

1. Year of reference differs from 2018. Refer to the source table for more details.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

Countries are ranked in descending order of the public net financial returns of tertiary education for a man.

Source: OECD (2021), Tables A5.3 and A5.4. See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

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Countries with high direct public costs (more than USD 80 000 and up to USD 185 000 for both men and women), such as Denmark, Luxembourg, Norway, Sweden and Switzerland, also tend to have large total public costs. In contrast, Chile has the lowest total public costs (at USD 17 000 for men and USD 16 400 for women) across all OECD countries with available data (Table A5.3 and Table A5.4).

On average in the OECD, the total public benefits are USD 194 500 for a tertiary-educated man, broken down into income tax effects (USD 140 500) and social contribution effects (USD 54 000). For a tertiary-educated woman, the total public benefits are USD 122 600, composed of income tax effects (USD 81 700) and social contribution effects (USD 40 900). Among OECD countries, Germany and Ireland have the largest total public benefits for tertiary-educated men (over USD 350 000) and Belgium has the largest public benefits for tertiary-educated women (over USD 250 000) (Table A5.4).

In relative terms, the public benefit from each USD invested in tertiary education are generally much lower than the private benefit, as the total costs are higher for governments than for individuals. On average across OECD countries, each USD that governments invest in tertiary education generates a public benefit of USD 2.9 for a man and USD 2.0 for a woman (Table A5.3 and Table A5.4).

In Estonia, Sweden and Switzerland, the total public benefits do not cover the total public costs of tertiary education for women, so the net financial returns are negative. In all countries, governments receive more benefit from each USD invested in tertiary education for a man than for a woman. The difference by gender is mainly due to the fact that the public benefits for men are greater than the public benefits for women. This suggests that governments have a role to play in improving women's integration into the labour market (Figure A5.4, Table A5.3 and Table A5.4).

Financial incentives by level of tertiary education

The net financial returns for tertiary education are divided into two categories for analysis: short-cycle tertiary attainment and attainment of a bachelor's, master's and doctoral or equivalent degree. The share of the population with qualifications at each tertiary level differs across countries (see Indicator A1), and the mix of qualifications can impact the financial returns to education for tertiary education overall.

For all countries with available data, the private and public net financial returns from obtaining a bachelor's, master's or doctoral degree or equivalent are greater than from obtaining a short-cycle tertiary degree. Although the total costs of a bachelor's, master's or doctoral degree or equivalent tend to be higher, the total benefits accrued during individuals' working lives compensate for the higher initial costs (Tables A5.5 and A5.6, available on line). Private net financial returns for tertiary education overall would therefore underestimate the value of investing in bachelor's, master's and doctoral degrees or equivalent, especially in countries with a relatively large share of adults whose highest level of attainment is short-cycle tertiary (see Indicator A1).

Box A5.1. The effect of the discount rate on the net financial returns to education

The calculation of the financial returns, or the net present value (NPV), of education corresponds to a cost-benefit analysis that converts future expected flows into a present value by using a discount rate. The discount rate takes into account the fact that money tomorrow is worth less than money today, and must therefore be "discounted" at a specific rate to find its current worth. The choice of the discount rate is challenging, and it makes a considerable difference when analysing the returns to long-term investments, as is the case with investment in education.

The results presented in the tables and figures of this indicator are calculated using a discount rate of 2%, based on the average real interest on government bonds across OECD countries. However, it can be argued that education is not a risk-free investment, and that the discount rate should therefore be higher. The OECD countries that perform similar cost-benefit analyses use discount rates higher than 2%, but the rate used varies across countries (OECD, 2018_[1]).

In order to assess the size of the impact of the discount rate, it is helpful to perform a sensitivity analysis. Table A5.5 shows how the private financial returns for a man attaining upper secondary education changes when three different discount rates are used. Changing from a discount rate of 2% to a rate of 3.75% reduces the NPV by at least 29% in all countries with available data. If a discount rate of 8% is used, the NPV falls by over 50% in all countries. These comparisons highlight the sensitivity of the NPV results to changes in the discount rate.

Table A5.a. Net financial returns for a man attaining tertiary education, by discount rate (2018)

Compared with returns to upper secondary education, in equivalent USD converted using PPPs for GDP

	Discount rate		
	2%	3.75%	8%
OECD Countries			
Australia	212 100	115 200	13 200
Austria	328 800	180 100	30 800
Belgium	209 400	113 600	14 600
Canada	316 400	200 700	72 400
Chile ¹	531 400	342 200	134 900
Czech Republic	258 200	137 100	7 600
Denmark	269 800	162 500	46 700
Estonia	139 800	86 900	27 700
Finland ¹	264 300	163 900	54 000
France ¹	344 300	208 600	64 900
Germany	350 000	214 500	68 600
Hungary	357 800	227 200	79 900
Ireland	519 600	331 900	129 000
Israel	358 000	239 400	102 300
Italy ¹	203 300	102 500	9 200
Korea	251 700	159 000	57 600
Latvia ²	111 800	70 500	23 200
Luxembourg ^{2,3}	325 500	194 600	56 000
New Zealand ¹	233 800	136 900	36 600
Norway	217 800	114 700	10 200
Poland	349 700	212 700	60 900
Portugal	229 700	123 300	17 900
Slovak Republic	210 300	119 600	21 800
Slovenia	267 700	151 200	31 000
Spain	236 600	141 300	40 000
Sweden	94 000	36 900	-17 200
Switzerland	465 800	281 200	81 800
Turkey ^{2,3}	161 400	103 200	38 800
United Kingdom	210 800	121 200	22 800
United States	587 400	375 600	139 300
OECD average	287 200	174 200	49 900
EU22 average	266 800	160 500	41 800

Note: Values are based on the difference between men who attained tertiary education and those who attained upper secondary education. Values have been rounded up to the nearest hundred. Direct costs to education do not include student loans. Costs and benefits are earned over a working-age life and are transferred back to the start of the investment.


1. Year of reference 2017.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

3. The probability of students having earnings refers to the employment rate from the LSO TRANS questionnaire instead of the share of earners from the LSO Earnings questionnaire.

Source: OECD (2021). See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

Please refer to the *Reader's Guide* for information concerning symbols for missing data and abbreviations.

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Definitions

Adults refer to 15-64 year-olds.

The **benefit-cost ratio** is total benefits relative to total costs, representing the financial benefits of attaining an additional level of education for each USD invested in it.

Direct costs are the direct expenditure on education per student during the time spent in school. Direct costs of education do not include student loans.

- **Private direct costs** are the total expenditure by households on education. They include net payments to educational institutions as well as payments for educational goods and services outside of educational institutions (school supplies, tutoring, etc.).
- **Public direct costs** are the spending by government on a student's education. They include direct public expenditure on educational institutions, government scholarships and other grants to students and households, and transfers and payments to other private entities for educational purposes. They do not include student loans.

Educational attainment refers to the highest level of education successfully completed by an individual.

Foregone earnings are the net earnings an individual not in education (a non-student) can expect, minus the net earnings an individual can expect to receive while studying.

Foregone taxes are the additional tax revenues the government would have received if the individual had chosen to enter the labour force as a non-student instead of pursuing further studies.

Gross earnings benefits are the discounted sum of earnings premiums over the course of a working-age life associated with a higher level of education.

The **income tax effect** is the discounted sum of additional levels of income tax paid by the private individual or earned by the government over the course of a working-age life associated with a higher level of education.

The **internal rate of return** is the (hypothetical) real interest rate equalising the costs and benefits related to the educational investment. It can be interpreted as the interest rate an individual can expect to receive every year during a working-age life on the investment made on a higher level of education.

Levels of education: See the *Reader's Guide* at the beginning of this publication for a presentation of all ISCED 2011 levels.

Net financial returns are the net present value of the financial investment in education, the difference between the discounted financial benefits and the discounted financial cost of education, representing the additional value that education produces over and above the 2% real interest that is charged on these cash flows.

Methodology

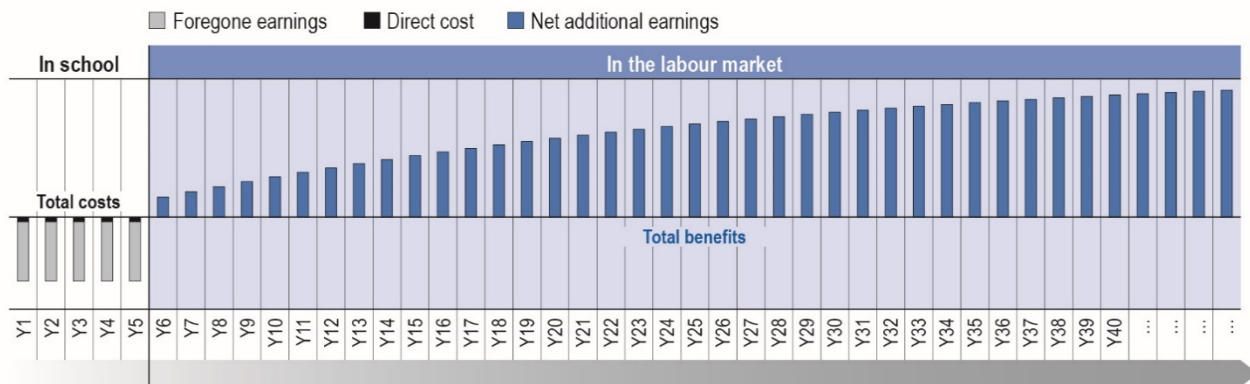
The effective retirement age could be slightly above the theoretical retirement age of 64 in some OECD countries (OECD, 2019^[2]). Returns to education are studied from the perspective of financial investment.

Two periods are considered (Diagram A5.1):

1. time spent in education during which the private individual and the government pay the cost of education
2. time spent after leaving formal education (or "not studying") during which the individual and the government receive the added payments associated with further education.

In calculating the returns to education, the approach taken here is the NPV of the investment. To allow direct comparisons of costs and benefits, the NPV expresses the present value for cash transfers happening at different times. In this framework, costs and benefits during a working-age life are transferred back to the start of the investment. This is done by discounting all cash flows back to the beginning of the investment with a fixed interest rate (discount rate).

Diagram A5.1. Financial returns on investment in education over a lifetime for a representative individual



To set a value for the discount rate, long-term government bonds have been used as a benchmark. The choice of discount rate is challenging, as it should reflect not only the overall time horizon of the investment, but also the cost of borrowing or the perceived risk of the investment (Box A5.1). To allow for comparability and to facilitate the interpretation of results, the same discount rate (2%) is applied across all OECD countries. All values presented in the tables in this indicator are in NPV equivalent USD using PPPs.

Source

The source for the direct costs of education is the UOE data collection on finance (year of reference 2018 unless otherwise specified in the tables).

The data on gross earnings are based on the OECD Network on Labour Market and Social Outcomes earnings data collection, which compiles data from national Labour Force Surveys, EU Statistics on Incomes and Living Conditions, Structure of Earnings Surveys, and other national registers and surveys. Earnings are age-, gender- and attainment-level specific. For the calculation of this indicator, data on earnings have been pooled from three different years (2016-18).

Income tax data are computed using the OECD Taxing Wages model, which determines the level of taxes based on a given level of income. This model computes the level of the tax wedge on income for several household composition scenarios. For this indicator, a single worker with no children is used. For country-specific details on income tax in this model, see *Taxing Wages 2021* (OECD, 2021^[3]).

Employee social contributions are computed using the OECD Taxing Wages model's scenario of a single worker aged 40 with no children. For country-specific details on employee social contributions in this model, see *Taxing Wages 2021* (OECD, 2021^[3]).

References

- OECD (2021), *Taxing Wages 2021*, OECD Publishing, Paris, <https://doi.org/10.1787/83a87978-en>. [3]
- OECD (2019), *Pensions at a Glance 2019: OECD and G20 Indicators*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/b6d3dcfc-en>. [2]
- OECD (2018), *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/eag-2018-en>. [1]

Indicator A5 tables

Tables Indicator A5. What are the financial incentives to invest in education?

Table A5.1	Private costs and benefits for a man attaining tertiary education (2018)
Table A5.2	Private costs and benefits for a woman attaining tertiary education (2018)
Table A5.3	Public costs and benefits for a man attaining tertiary education (2018)
Table A5.4	Public costs and benefits for a woman attaining tertiary education (2018)
WEB Table A5.5	<i>Private/public costs and benefits for a man attaining tertiary education, by level of tertiary education (2018)</i>
WEB Table A5.6	<i>Private/public costs and benefits for a woman attaining tertiary education, by level of tertiary education (2018)</i>
WEB Table A5.7	<i>Private costs and benefits for a man attaining upper secondary education (2018)</i>
WEB Table A5.8	<i>Private costs and benefits for a woman attaining upper secondary education (2018)</i>
WEB Table A5.9	<i>Public costs and benefits for a man attaining upper secondary education (2018)</i>
WEB Table A5.10	<i>Public costs and benefits for a woman attaining upper secondary education (2018)</i>

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Cut-off date for the data: 17 June 2021. Any updates on data can be found on line at: <http://dx.doi.org/10.1787/eaq-data-en>. More breakdowns can also be found at: <http://stats.oecd.org>, *Education at a Glance Database*.

Table A5.1. Private costs and benefits for a man attaining tertiary education (2018)

As compared with a man attaining upper secondary education, in equivalent USD converted using PPPs for GDP; future costs and benefits are discounted at a rate of 2%

OECD Countries	Direct costs (1)	Foregone earnings (2)	Total costs (3) = (1) + (2)	Earnings benefits decomposition (taking into account the employment effect)			Total benefits (7) = (4) + (5) + (6)	Net financial returns (8) = (7) + (3)	Internal rate of return (9)	Benefit-cost ratio (10) = (7)/(3)
				Gross earnings benefits (4)	Income tax effect (5)	Social contribution effect (6)				
Australia	-36 900	-36 900	-73 800	441 700	-155 800	0	285 900	212 100	9%	3.9
Austria	0	-69 800	-69 800	713 600	-200 400	-114 600	398 600	328 800	10%	5.7
Belgium	-1 800	-60 200	-62 000	582 000	-225 200	-85 400	271 400	209 400	9%	4.4
Canada	-14 600	-24 600	-39 200	503 900	-131 800	-16 500	355 600	316 400	19%	9.1
Chile ¹	-16 600	-15 800	-32 400	621 300	-14 000	-43 500	563 800	531 400	28%	17.4
Colombia	m	m	m	m	m	m	m	m	m	m
Costa Rica	m	m	m	m	m	m	m	m	m	m
Czech Republic	-5 400	-104 100	-109 500	531 500	-105 300	-58 500	367 700	258 200	8%	3.4
Denmark	0	-42 900	-42 900	566 300	-253 600	0	312 700	269 800	14%	7.3
Estonia	0	-33 500	-33 500	243 400	-66 200	-3 900	173 300	139 800	15%	5.2
Finland ¹	0	-39 100	-39 100	530 100	-177 200	-49 500	303 400	264 300	16%	7.8
France ¹	-5 300	-42 700	-48 000	624 800	-147 300	-85 200	392 300	344 300	16%	8.2
Germany	-4 000	-43 600	-47 600	771 500	-236 900	-137 000	397 600	350 000	16%	8.4
Greece	m	m	m	m	m	m	m	m	m	m
Hungary	-11 700	-39 400	-51 100	614 900	-92 200	-113 800	408 900	357 800	17%	8.0
Iceland	m	m	m	m	m	m	m	m	m	m
Ireland	-2 100	-35 800	-37 900	1 015 800	-417 600	-40 700	557 500	519 600	28%	14.7
Israel	-8 700	-15 200	-23 900	576 900	-130 900	-64 100	381 900	358 000	31%	16.0
Italy ¹	-4 000	-25 800	-29 800	467 900	-188 900	-45 900	233 100	203 300	9%	7.8
Japan	m	m	m	m	m	m	m	m	m	m
Korea	-7 000	-26 400	-33 400	354 500	-39 300	-30 100	285 100	251 700	20%	8.5
Latvia ²	-11 200	-17 700	-28 900	211 400	-47 500	-23 200	140 700	111 800	15%	4.9
Lithuania	m	m	m	m	m	m	m	m	m	m
Luxembourg ^{2,3}	0	-67 600	-67 600	687 400	-208 900	-85 400	393 100	325 500	14%	5.8
Mexico	m	m	m	m	m	m	m	m	m	m
Netherlands	m	m	m	m	m	m	m	m	m	m
New Zealand ¹	-19 000	-43 800	-62 800	422 200	-125 600	0	296 600	233 800	12%	4.7
Norway	0	-57 300	-57 300	455 300	-142 900	-37 300	275 100	217 800	9%	4.8
Poland	-3 000	-72 100	-75 100	579 200	-51 200	-103 200	424 800	349 700	13%	5.7
Portugal	-11 100	-43 700	-54 800	483 800	-146 100	-53 200	284 500	229 700	10%	5.2
Slovak Republic	-7 500	-47 500	-55 000	376 300	-60 600	-50 400	265 300	210 300	10%	4.8
Slovenia	-4 800	-59 100	-63 900	578 000	-118 700	-127 700	331 600	267 700	11%	5.2
Spain	-14 900	-29 200	-44 100	401 400	-95 200	-25 500	280 700	236 600	14%	6.4
Sweden	0	-43 100	-43 100	241 400	-93 000	-11 300	137 100	94 000	6%	3.2
Switzerland	-12 800	-72 300	-85 100	741 000	-144 000	-46 100	550 900	465 800	14%	6.5
Turkey ^{2,3}	-3 000	-10 200	-13 200	268 200	-53 400	-40 200	174 600	161 400	23%	13.2
United Kingdom	-53 600	-33 800	-87 400	433 200	-84 100	-50 900	298 200	210 800	10%	3.4
United States	-40 200	-34 400	-74 600	998 100	-259 700	-76 400	662 000	587 400	20%	8.9
OECD average	-10 000	-42 900	-52 900	534 600	-140 500	-54 000	340 100	287 200	15%	6.4
EU22 average	-4 600	-48 300	-52 900	537 900	-154 300	-63 900	319 700	266 800	13%	6.0

Note: Values are based on the difference between men who attained tertiary education and those who attained upper secondary education. Values have been rounded up to the nearest hundred. Direct costs to education do not include student loans. Costs and benefits are earned over a working-age life and are transferred back to the start of the investment.

1. Year of reference 2017.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

3. The probability of students having earnings refers to the employment rate from the LSO TRANS questionnaire instead of the share of earners from the LSO Earnings questionnaire.

Source: OECD (2021). See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

Please refer to the *Reader's Guide* for information concerning symbols for missing data and abbreviations.

Table A5.2. Private costs and benefits for a woman attaining tertiary education (2018)

As compared with a woman attaining upper secondary education, in equivalent USD converted using PPPs for GDP; future costs and benefits are discounted at a rate of 2%

	Direct costs	Foregone earnings	Total costs	Earnings benefits decomposition (taking into account the employment effect)			Total benefits	Net financial returns	Internal rate of return	Benefit-cost ratio
				Gross earnings benefits	Income tax effect	Social contribution effect				
				(1)	(2)	(3) = (1) + (2)				
OECD Countries										
Australia	-36 900	-24 200	-61 100	429 900	-132 400	0	297 500	236 400	13%	4.9
Austria	0	-55 600	-55 600	427 500	-92 400	-82 500	252 600	197 000	9%	4.5
Belgium	-1 800	-48 000	-49 800	533 900	-168 200	-102 300	263 400	213 600	14%	5.3
Canada	-14 600	-15 300	-29 900	394 900	-73 800	-30 800	290 300	260 400	24%	9.7
Chile ¹	-16 600	-8 000	-24 600	391 800	-3 000	-27 400	361 400	336 800	30%	14.7
Colombia	m	m	m	m	m	m	m	m	m	m
Costa Rica	m	m	m	m	m	m	m	m	m	m
Czech Republic	-5 400	-70 500	-75 900	321 600	-61 100	-35 400	225 100	149 200	8%	3.0
Denmark	0	-21 200	-21 200	348 300	-136 600	0	211 700	190 500	22%	10.0
Estonia	0	-19 600	-19 600	224 500	-40 400	-3 600	180 500	160 900	26%	9.2
Finland ¹	0	-30 200	-30 200	377 800	-107 900	-35 200	234 700	204 500	19%	7.8
France ¹	-5 300	-31 600	-36 900	426 700	-79 500	-61 200	286 000	249 100	19%	7.8
Germany	-4 000	-41 200	-45 200	452 900	-106 000	-93 400	253 500	208 300	12%	5.6
Greece	m	m	m	m	m	m	m	m	m	m
Hungary	-11 700	-31 500	-43 200	313 000	-47 000	-57 900	208 100	164 900	12%	4.8
Iceland	m	m	m	m	m	m	m	m	m	m
Ireland	-2 100	-17 800	-19 900	654 400	-182 800	-28 600	443 000	423 100	56%	22.3
Israel	-8 700	-11 700	-20 400	372 200	-50 600	-37 400	284 200	263 800	31%	13.9
Italy ¹	-4 000	-17 800	-21 800	357 200	-108 900	-33 900	214 400	192 600	14%	9.8
Japan	m	m	m	m	m	m	m	m	m	m
Korea	-7 000	-25 800	-32 800	237 800	-11 600	-20 200	206 000	173 200	20%	6.3
Latvia ²	-11 200	-9 600	-20 800	193 500	-39 600	-21 300	132 600	111 800	18%	6.4
Lithuania	m	m	m	m	m	m	m	m	m	m
Luxembourg ^{2,3}	0	-52 000	-52 000	522 800	-129 400	-64 900	328 500	276 500	15%	6.3
Mexico	m	m	m	m	m	m	m	m	m	m
Netherlands	m	m	m	m	m	m	m	m	m	m
New Zealand ¹	-19 000	-33 600	-52 600	349 200	-82 200	0	267 000	214 400	16%	5.1
Norway	0	-32 100	-32 100	431 700	-100 200	-35 400	296 100	264 000	19%	9.2
Poland	-3 000	-42 700	-45 700	422 900	-34 700	-75 400	312 800	267 100	17%	6.8
Portugal	-11 100	-37 400	-48 500	375 600	-100 200	-41 300	234 100	185 600	10%	4.8
Slovak Republic	-7 500	-29 000	-36 500	236 900	-36 300	-31 800	168 800	132 300	10%	4.6
Slovenia	-4 800	-27 300	-32 100	459 100	-87 300	-101 500	270 300	238 200	15%	8.4
Spain	-14 900	-18 400	-33 300	369 600	-75 500	-23 500	270 600	237 300	17%	8.1
Sweden	0	-26 700	-26 700	236 200	-51 000	-16 500	168 700	142 000	11%	6.3
Switzerland	-12 800	-73 800	-86 600	509 600	-71 900	-31 700	406 000	319 400	13%	4.7
Turkey ^{2,3}	-3 000	-4 500	-7 500	254 400	-35 700	-38 200	180 500	173 000	36%	24.1
United Kingdom	-53 600	-25 900	-79 500	388 100	-71 600	-43 800	272 700	193 200	12%	3.4
United States	-40 200	-17 300	-57 500	667 000	-133 400	-51 000	482 600	425 100	21%	8.4
OECD average	-10 000	-30 000	-40 000	389 400	-81 700	-40 900	266 800	226 800	19%	6.7
EU22 average	-4 600	-33 100	-37 700	381 800	-88 700	-47 900	245 200	207 500	17%	6.5

Note: Values are based on the difference between women who attained tertiary education and those who attained upper secondary education. Values have been rounded up to the nearest hundred. Direct costs to education do not include student loans. Costs and benefits are earned over a working-age life and are transferred back to the start of the investment.

1. Year of reference 2017.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

3. The probability of students having earnings refers to the employment rate from the LSO TRANS questionnaire instead of the share of earners from the LSO Earnings questionnaire.

Source: OECD (2021). See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

Please refer to the Reader's Guide for information concerning symbols for missing data and abbreviations.

Table A5.3. Public costs and benefits for a man attaining tertiary education (2018)

As compared with a man attaining upper secondary education, in equivalent USD converted using PPPs for GDP; future costs and benefits are discounted at a rate of 2%

	Direct costs	Foregone taxes on earnings	Total costs	Earnings benefits decomposition (taking into account the employment effect)		Total benefits	Net financial returns	Internal rate of return	Benefit-cost ratio
				Income tax effect	Social contribution effect				
				(1)	(2)				
OECD Countries									
Australia	-29 100	-8 200	-37 300	155 800	0	155 800	118 500	9%	4.2
Austria	-73 100	-23 600	-96 700	200 400	114 600	315 000	218 300	7%	3.3
Belgium	-61 200	-32 400	-93 600	225 200	85 400	310 600	217 000	8%	3.3
Canada	-44 000	-10 600	-54 600	131 800	16 500	148 300	93 700	7%	2.7
Chile ¹	-15 800	-1 200	-17 000	14 000	43 500	57 500	40 500	8%	3.4
Colombia	m	m	m	m	m	m	m	m	m
Costa Rica	m	m	m	m	m	m	m	m	m
Czech Republic	-51 600	-36 800	-88 400	105 300	58 500	163 800	75 400	5%	1.9
Denmark	-94 100	-25 600	-119 700	253 600	0	253 600	133 900	5%	2.1
Estonia	-52 800	-5 500	-58 300	66 200	3 900	70 100	11 800	3%	1.2
Finland ¹	-72 900	-8 100	-81 000	177 200	49 500	226 700	145 700	7%	2.8
France ¹	-53 300	-12 200	-65 500	147 300	85 200	232 500	167 000	8%	3.5
Germany	-78 600	-21 300	-99 900	236 900	137 000	373 900	274 000	9%	3.7
Greece	m	m	m	m	m	m	m	m	m
Hungary	-37 400	-19 800	-57 200	92 200	113 800	206 000	148 800	10%	3.6
Iceland	m	m	m	m	m	m	m	m	m
Ireland	-37 800	-5 300	-43 100	417 600	40 700	458 300	415 200	17%	10.6
Israel	-25 000	-600	-25 600	130 900	64 100	195 000	169 400	15%	7.6
Italy ¹	-38 200	-5 500	-43 700	188 900	45 900	234 800	191 100	8%	5.4
Japan	m	m	m	m	m	m	m	m	m
Korea	-22 500	-2 700	-25 200	39 300	30 100	69 400	44 200	7%	2.8
Latvia ²	-23 100	-5 500	-28 600	47 500	23 200	70 700	42 100	8%	2.5
Lithuania	m	m	m	m	m	m	m	m	m
Luxembourg ^{2,3}	-184 500	-12 100	-196 600	208 900	85 400	294 300	97 700	4%	1.5
Mexico	m	m	m	m	m	m	m	m	m
Netherlands	m	m	m	m	m	m	m	m	m
New Zealand ¹	-34 200	-7 700	-41 900	125 600	0	125 600	83 700	8%	3.0
Norway	-96 100	-20 800	-116 900	142 900	37 300	180 200	63 300	4%	1.5
Poland	-39 400	-24 600	-64 000	51 200	103 200	154 400	90 400	7%	2.4
Portugal	-33 600	-12 300	-45 900	146 100	53 200	199 300	153 400	8%	4.3
Slovak Republic	-37 400	-14 200	-51 600	60 600	50 400	111 000	59 400	6%	2.2
Slovenia	-51 300	-33 500	-84 800	118 700	127 700	246 400	161 600	7%	2.9
Spain	-38 000	-2 000	-40 000	95 200	25 500	120 700	80 700	7%	3.0
Sweden	-87 700	-14 900	-102 600	93 000	11 300	104 300	1 700	2%	1.0
Switzerland	-102 700	-13 500	-116 200	144 000	46 100	190 100	73 900	4%	1.6
Turkey ^{2,3}	-26 900	-2 000	-28 900	53 400	40 200	93 600	64 700	8%	3.2
United Kingdom	-26 500	-8 400	-34 900	84 100	50 900	135 000	100 100	11%	3.9
United States	-54 000	-9 600	-63 600	259 700	76 400	336 100	272 500	12%	5.3
OECD average	-54 100	-13 400	-67 500	140 500	54 000	194 500	127 000	8%	2.9
EU22 average	-60 300	-16 600	-76 900	154 300	63 900	218 200	141 300	7%	2.8

Note: Values are based on the difference between men who attained tertiary education and those who attained upper secondary education. Values have been rounded up to the nearest hundred. Direct costs to education do not include student loans. Costs and benefits are earned over a working-age life and are transferred back to the start of the investment.

1. Year of reference 2017.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

3. The probability of students having earnings refers to the employment rate from the LSO TRANS questionnaire instead of the share of earners from the LSO Earnings questionnaire.

Source: OECD (2021). See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

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Table A5.4. Public costs and benefits for a woman attaining tertiary education (2018)

As compared with a woman attaining upper secondary education, in equivalent USD converted using PPPs for GDP; future costs and benefits are discounted at a rate of 2%

	Direct costs	Foregone taxes on earnings	Total costs	Earnings benefits decomposition (taking into account the employment effect)		Total benefits	Net financial returns	Internal rate of return	Benefit-cost ratio
				Income tax effect	Social contribution effect				
				(1)	(2)				
OECD Countries									
Australia	-29 100	-4 300	-33 400	132 400	0	132 400	99 000	11%	4.0
Austria	-73 100	-12 300	-85 400	92 400	82 500	174 900	89 500	5%	2.0
Belgium	-61 200	-23 200	-84 400	168 200	102 300	270 500	186 100	9%	3.2
Canada	-44 000	-6 700	-50 700	73 800	30 800	104 600	53 900	6%	2.1
Chile ¹	-15 800	-600	-16 400	3 000	27 400	30 400	14 000	5%	1.9
Colombia	m	m	m	m	m	m	m	m	m
Costa Rica	m	m	m	m	m	m	m	m	m
Czech Republic	-51 600	-23 400	-75 000	61 100	35 400	96 500	21 500	3%	1.3
Denmark	-94 100	-13 300	-107 400	136 600	0	136 600	29 200	3%	1.3
Estonia	-52 800	-2 800	-55 600	40 400	3 600	44 000	-11 600	1%	0.8
Finland ¹	-72 900	-4 300	-77 200	107 900	35 200	143 100	65 900	5%	1.9
France ¹	-53 300	-9 000	-62 300	79 500	61 200	140 700	78 400	6%	2.3
Germany	-78 600	-16 600	-95 200	106 000	93 400	199 400	104 200	5%	2.1
Greece	m	m	m	m	m	m	m	m	m
Hungary	-37 400	-15 900	-53 300	47 000	57 900	104 900	51 600	5%	2.0
Iceland	m	m	m	m	m	m	m	m	m
Ireland	-37 800	-300	-38 100	182 800	28 600	211 400	173 300	13%	5.5
Israel	-25 000	-400	-25 400	50 600	37 400	88 000	62 600	10%	3.5
Italy ¹	-38 200	-800	-39 000	108 900	33 900	142 800	103 800	7%	3.7
Japan	m	m	m	m	m	m	m	m	m
Korea	-22 500	-2 600	-25 100	11 600	20 200	31 800	6 700	3%	1.3
Latvia ²	-23 100	-2 300	-25 400	39 600	21 300	60 900	35 500	7%	2.4
Lithuania	m	m	m	m	m	m	m	m	m
Luxembourg ^{2,3}	-184 500	-8 300	-192 800	129 400	64 900	194 300	1 500	2%	1.0
Mexico	m	m	m	m	m	m	m	m	m
Netherlands	m	m	m	m	m	m	m	m	m
New Zealand ¹	-34 200	-5 100	-39 300	82 200	0	82 200	42 900	6%	2.1
Norway	-96 100	-8 400	-104 500	100 200	35 400	135 600	31 100	3%	1.3
Poland	-39 400	-14 400	-53 800	34 700	75 400	110 100	56 300	6%	2.0
Portugal	-33 600	-4 600	-38 200	100 200	41 300	141 500	103 300	8%	3.7
Slovak Republic	-37 400	-7 300	-44 700	36 300	31 800	68 100	23 400	4%	1.5
Slovenia	-51 300	-15 800	-67 100	87 300	101 500	188 800	121 700	7%	2.8
Spain	-38 000	-1 300	-39 300	75 500	23 500	99 000	59 700	6%	2.5
Sweden	-87 700	-9 100	-96 800	51 000	16 500	67 500	-29 300	1%	0.7
Switzerland	-102 700	-12 600	-115 300	71 900	31 700	103 600	-11 700	2%	0.9
Turkey ^{2,3}	-26 900	-800	-27 700	35 700	38 200	73 900	46 200	7%	2.7
United Kingdom	-26 500	-6 400	-32 900	71 600	43 800	115 400	82 500	11%	3.5
United States	-54 000	-5 300	-59 300	133 400	51 000	184 400	125 100	9%	3.1
OECD average	-54 100	-7 900	-62 000	81 700	40 900	122 600	60 600	6%	2.0
EU22 average	-60 300	-9 700	-70 000	88 700	47 900	136 600	66 600	6%	2.0

Note: Values are based on the difference between women who attained tertiary education and those who attained upper secondary education. Values have been rounded up to the nearest hundred. Direct costs to education do not include student loans. Costs and benefits are earned over a working-age life and are transferred back to the start of the investment.

1. Year of reference 2017.

2. Only net earnings are available and the calculations use these values as if they were gross earnings.

3. The probability of students having earnings refers to the employment rate from the LSO TRANS questionnaire instead of the share of earners from the LSO Earnings questionnaire.

Source: OECD (2021). See *Source* section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2021_Annex3_ChapterA.pdf).

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