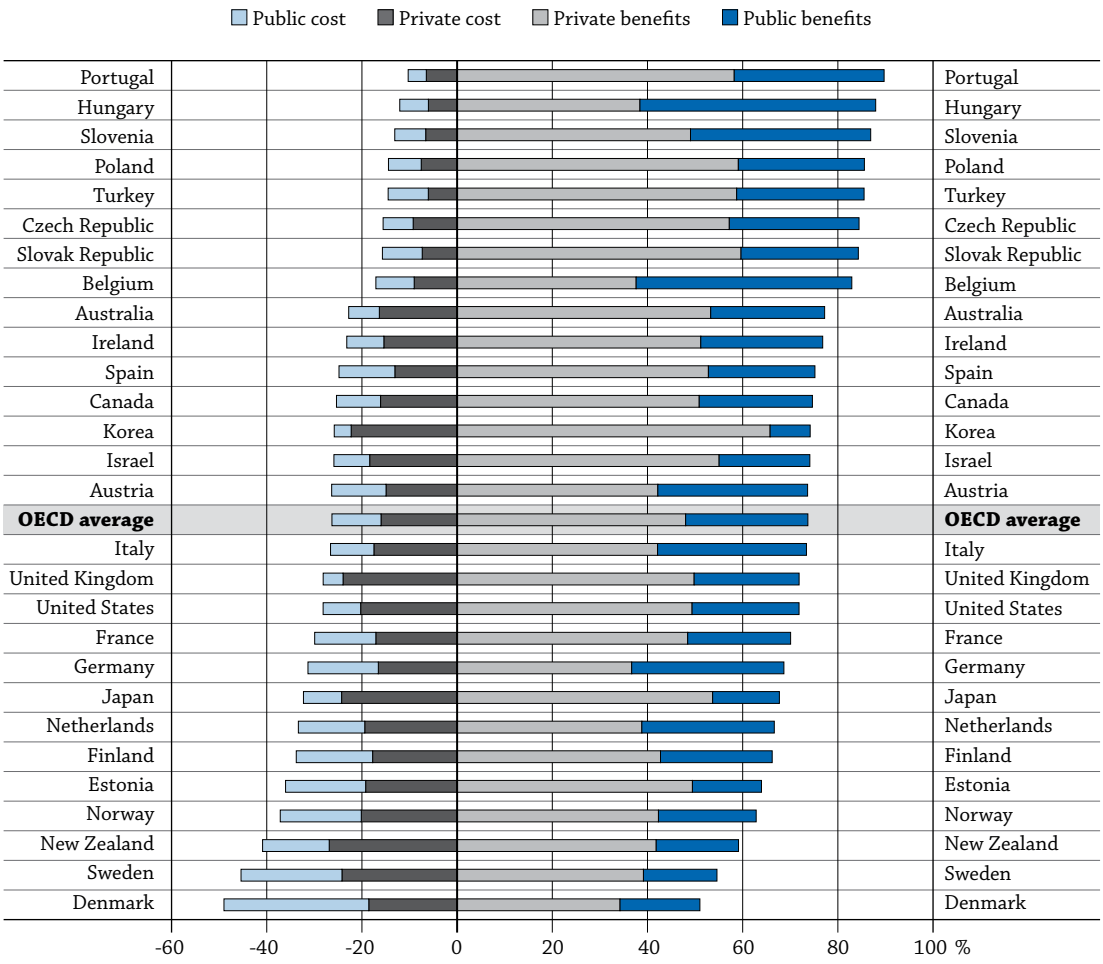
WHAT ARE THE INCENTIVES TO INVEST IN EDUCATION?

- On average across 28 OECD countries, the total return (net present value), both private and public, to a man who successfully completes upper secondary or post-secondary non-tertiary and tertiary education is USD 388 300. The equivalent return for a woman is USD 250 700.
- The net public return on an investment in tertiary education is over USD 100 000 for men, on average – almost three times the amount of public investment. For women, the net public return is almost twice the amount of public investment.
- On average, the gross earnings premium for an individual with a tertiary degree exceeds USD 340 000 for men and USD 235 000 for women across OECD countries.

Chart A9.1. Distribution of public/private costs/benefits for a woman obtaining tertiary education as part of initial education, ISCED 5/6 (2008 or latest available year)



Notes: Australia, Belgium and Turkey refer to 2005; Portugal refers to 2006. Japan and Slovenia refer to 2007. All other countries refer to 2008.
Cashflows are discounted at a 3% interest rate.
Countries are ranked in descending order of the benefits (public + private) as a proportion of total (public + private) values for women immediately after acquiring tertiary education, ISCED 5/6.
Source: OECD. Tables A9.3 and A9.4. See Annex 3 for notes (*www.oecd.org/edu/eag2012*).
StatLink http://dx.doi.org/10.1787/888932662200

Context

The financial benefits of completing higher levels of education motivate individuals to postpone consumption and earnings today for future rewards. From a policy perspective, awareness of economic incentives is crucial to understanding how individuals move through the education system. Large upward shifts in the demand for education can drive up earnings and returns considerably before supply catches up. This provides a strong signal, both to individuals and to education systems, of the need for additional investment in education.

In some countries, however, the labour market may not effectively signal demand because of rigid labour laws and structures that tend to compress wages across different educational groups. Apart from these labour-related issues, major components of the return to education are directly linked to policy: access to education, taxes and the costs of education for the individual. The economic benefits of education flow not only to individuals but also to society through lower social transfers and in the additional revenue earned through taxes individuals pay once they enter the labour market. Building an educated populace can help reduce public expenditure on social welfare programmes and assist employers looking for personnel with specialised skills if the supply of those skills is insufficient to meet demand. In shaping policies, it is important to consider the balance between private and public returns.

Other findings

- In Austria, Ireland, Norway, Portugal, the United Kingdom and the United States, a man with an upper secondary or post-secondary non-tertiary education **can expect a gross earnings premium of more than USD 200 000** over his working life, compared with a man who has not attained that level of education.
- **The value of the gross earnings premium for men and women with a tertiary education is substantial.** For example, over the course of their working lives, tertiary-educated men in Austria, the Czech Republic, Hungary, Ireland, Italy, the Netherlands, Portugal and Slovenia can expect to earn at least USD 400 000 more than those with an upper secondary or post-secondary non-tertiary education. In the United States, this figure is almost USD 675 000.
- On average across OECD countries with comparable data, people who invest in tertiary education can expect a substantial **net gain of just over USD 160 000 for a man and almost USD 110 000 for a woman.** In Ireland, Portugal, Slovenia and the United States, the investment generates a net present value over USD 150 000 for a woman – a strong incentive to complete this level of education.
- **An individual invests an average of about USD 55 000 to acquire a tertiary qualification, when direct and indirect costs are taken into account.** In Japan, the Netherlands, the United Kingdom and the United States, this investment exceeds USD 100 000 in the case of a man who obtains a tertiary education.

Analysis

Financial returns on investment in education

The overall economic benefits of education can be assessed by estimating the economic value of the investment in education, which essentially measures the degree to which the costs of attaining higher levels of education translate into higher levels of earnings.

To understand how costs and benefits are shared between the private and public side, one must understand each calculation. The calculation of benefits includes earnings, taxes, social contributions and social transfers as well as differences in the probability of finding work by educational level. The cost components include public and private direct costs, as well as foregone earnings while in school, adjusted for the probability of finding work and for foregone taxes, social contributions and social transfers. This indicator relies on 2008 data or the most recent available year.

In practice, raising levels of education will give rise to a complex set of fiscal effects beyond those taken into account here. As earnings generally increase with educational attainment, individuals with higher levels of education typically consume more goods and services, and thus pay additional taxes on their consumption. Public returns are thus underestimated in this indicator.

Individuals with higher earnings typically also pay more into their pensions and, after leaving the labour force, will have a further income advantage that is not taken into account in the calculations here. Similarly, many governments have programmes that provide loans to students at interest rates below those used in this indicator. These subsidies can often make a substantial difference in the returns to education for the individual. Given these factors, the returns on education in different countries should be assessed with caution.

Both costs and benefits are discounted back in time at a real discount rate of 3%, reflecting the fact that the calculations are made in constant prices (see the *Methodology* section for further discussion of the discount rate). The economic benefits of tertiary education are compared to those of upper secondary or post-secondary non-tertiary education; for upper secondary or post-secondary non-tertiary education, below upper secondary education is used as a point of reference. In the calculations, women are benchmarked against women, and men against men.

Incentives for individuals to invest in education

Upper secondary or post-secondary non-tertiary education

Table A9.1 shows the value of each component and the net present value of the overall investment for a man and a woman attaining an upper secondary or a post-secondary non-tertiary education.

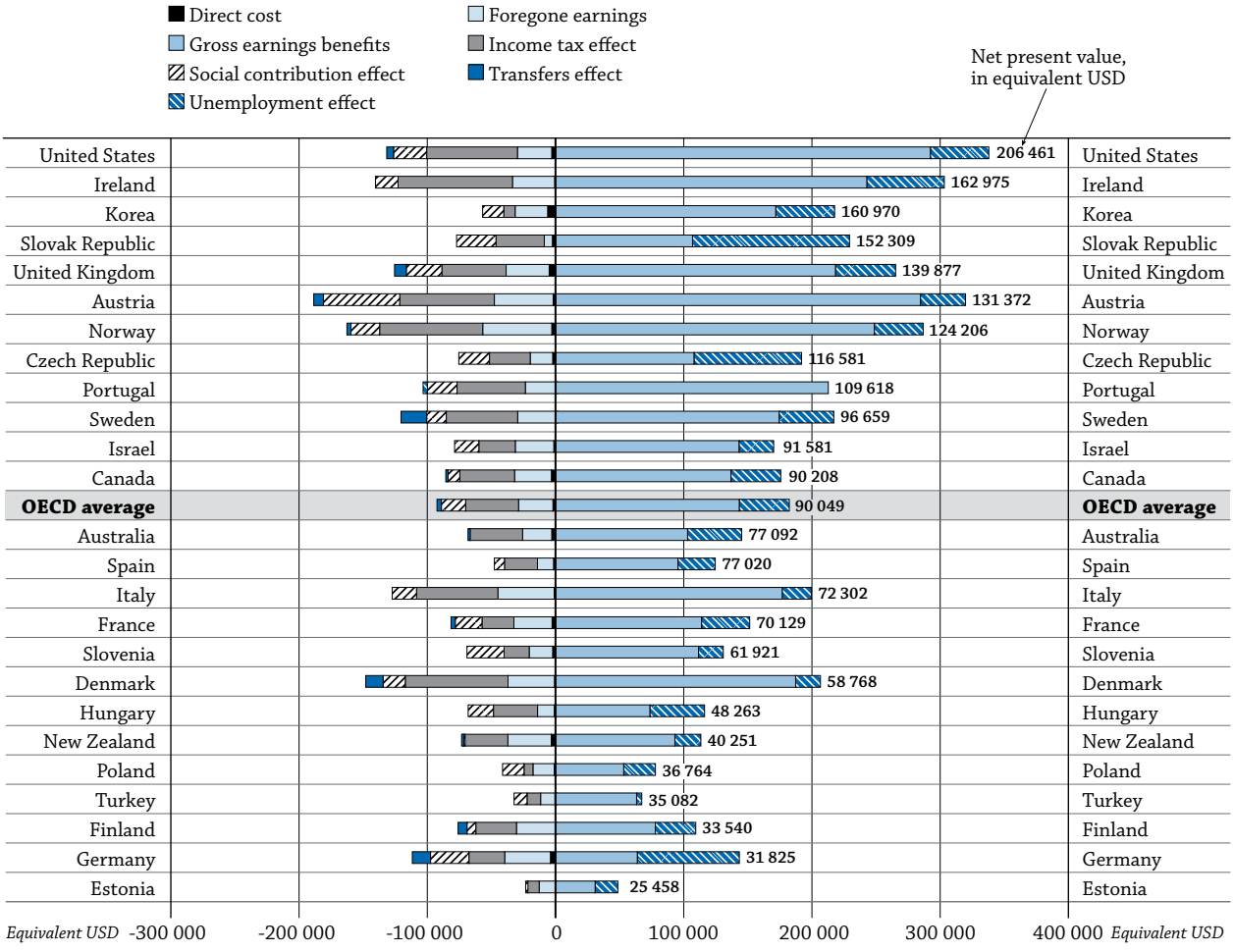
The direct costs of education for a man investing in an upper secondary or post-secondary non-tertiary education are usually negligible; the main investment cost is foregone earnings (Chart A9.2). Depending on the length of education, salary levels and the possibility of finding a job, foregone earnings vary substantially among countries. In Estonia, Hungary, the Slovak Republic, Spain and Turkey, foregone earnings are less than USD 15 000, while in Austria, Denmark, Germany, Italy and Norway, they exceed USD 35 000. Good labour-market prospects for young individuals who have not attained an upper secondary or post-secondary non-tertiary education increase the costs of further investment in education.

Gross earnings and reduced risk of unemployment over an individual's working life make up the benefit side. In most countries, men with an upper secondary or post-secondary non-tertiary education enjoy a significant earnings premium over those who have not attained that level of education. The value of reduced chances of unemployment can also be large. In the Czech Republic, Germany and the Slovak Republic, the better employment prospects for men with this level of education are valued at USD 75 000 or more (Table A9.1).

Additional education produces large returns from both the individual's and the public's perspective. A man who invests in upper secondary or post-secondary non-tertiary education can expect a net gain of more than USD 90 000 during his working life over a man who has not attained that level of education. However, the

amount varies significantly among countries: in Ireland, Korea, the Slovak Republic and the United States, this level of education generates over USD 150 000; but in Estonia, Finland, Germany, Poland and Turkey, the net benefits are less than USD 40 000 (Table A9.1).

Chart A9.2. Components of the private net present value for a man obtaining an upper secondary or post-secondary non-tertiary education, ISCED 3/4 (2008 or latest available year)



Notes: Japan is not included in the chart because the data at lower and upper secondary level of education are not broken down. Belgium and the Netherlands are not included in the chart because upper secondary education is compulsory. Australia and Turkey refer to 2005. Portugal refers to 2006. Slovenia refers to 2007. All other countries refer to 2008.
Cashflows are discounted at a 3% interest rate.
Countries are ranked in descending order of the net present value.
Source: OECD, Table A9.1. See Annex 3 for notes (*www.oecd.org/edu/eag2012*).
StatLink http://dx.doi.org/10.1787/888932662219

Men generally enjoy better financial returns on their upper secondary or post-secondary non-tertiary education than women, except in Estonia, Hungary, Italy, Poland and Spain. On average across OECD countries, a woman can expect a net gain of USD 67 000 over her working life. Some countries' social safety nets may work against women investing in further education and upper secondary education, in particular. In these countries, low wages for women who do not have an upper secondary or post-secondary non-tertiary education may be supplemented by social benefit systems, removing some of the income advantage in completing an upper secondary education (Table A9.1).

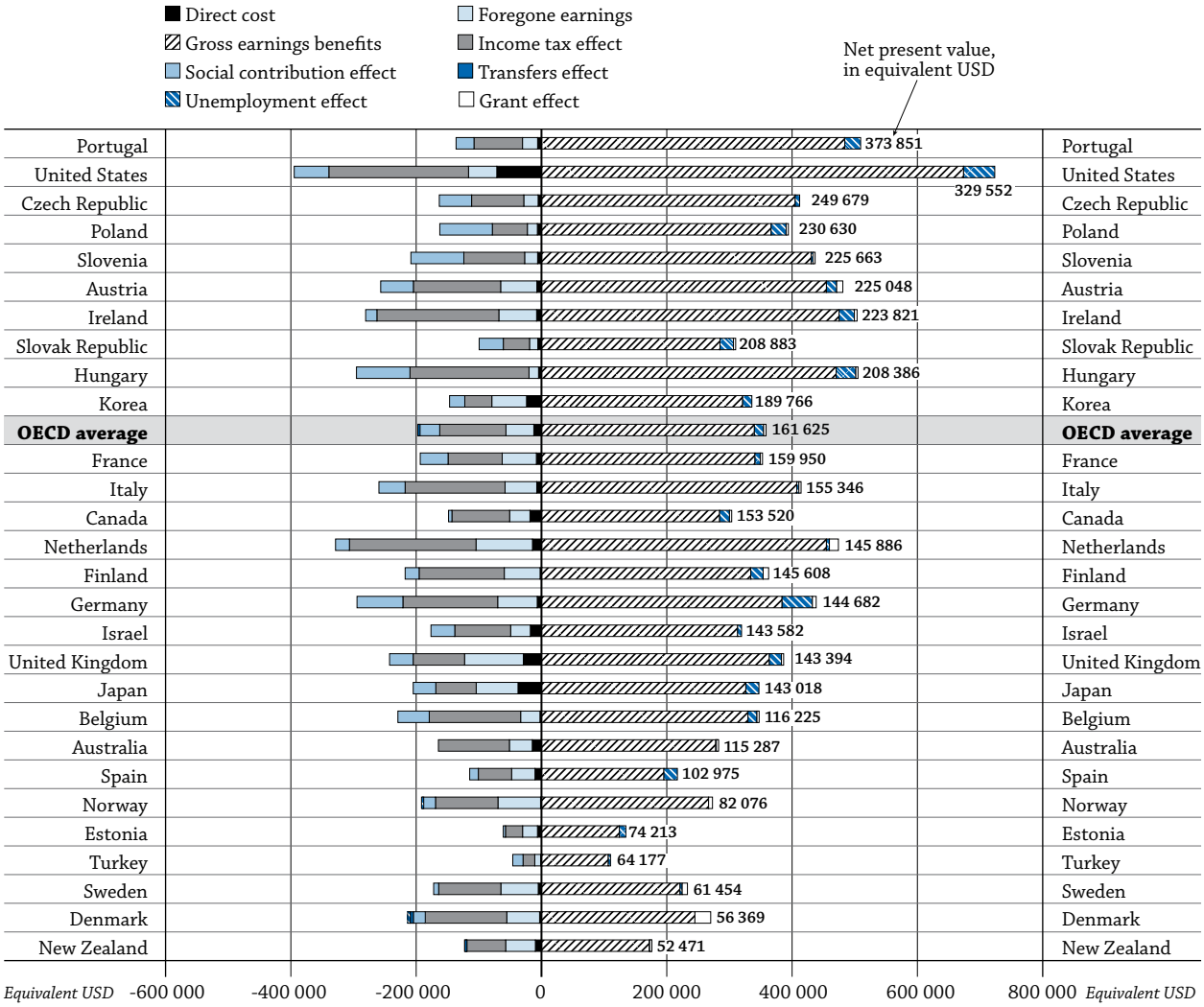
A9

Tertiary education

The net returns to individuals (both men and women) with a tertiary education are, on average, more than 60% larger than the returns for those with an upper secondary or post-secondary non-tertiary education, reflecting the fact that an upper secondary or post-secondary non-tertiary education has become the norm in OECD countries. In some countries, individuals need to obtain tertiary education to reap the full financial rewards of education beyond compulsory schooling (Tables A9.1 and A9.3).

The returns for investing in tertiary education are typically higher for men, except in Australia, where average returns are nearly identical between men and women, and in Spain and Turkey, where the returns are higher for women (Table A9.3). On average across OECD countries, a woman investing in tertiary education can expect a net gain of USD 110 000, while a man can expect a net gain of USD 162 000.

Chart A9.3. Components of the private net present value for a man obtaining tertiary education, ISCED 5/6 (2008 or latest available year)



Notes: Australia, Belgium and Turkey refer to 2005. Portugal refers to 2006. Japan and Slovenia refer to 2007. All other countries refer to 2008. Cashflows are discounted at a 3% interest rate.
Countries are ranked in descending order of the net present value.
Source: OECD. Table A9.3. See Annex 3 for notes (*www.oecd.org/edu/eag2012*).
StatLink http://dx.doi.org/10.1787/888932662238

The value of the gross earnings premium for men and women with tertiary education is substantial. Men in Austria, the Czech Republic, Hungary, Ireland, Italy, the Netherlands, Portugal, Slovenia and the United States can expect to earn at least an additional USD 400 000 over their working lives compared to an individual with an upper secondary or post-secondary non-tertiary education. Women in Austria, Ireland, the Netherlands, Portugal, Slovenia, the United Kingdom and the United States can expect to earn at least an additional USD 300 000 over their working lives compared to a woman with an upper secondary or post-secondary non-tertiary education.

Chart A9.3 shows the components of the returns on tertiary education for men in different countries. Compared with upper secondary or post-secondary non-tertiary education, the impact of unemployment benefits is less pronounced than the earnings differential; and taxes and the direct costs of education are more substantial.

Box A9.1. **Estimating returns to education**

There are two main approaches to estimating the financial returns to education: one founded on financed-based investment theory, the other on labour economics-based econometric specification.

The basis for an investment approach is the discount rate (the time-value of money), which makes it possible to compare costs or payments (cash flows) over time. The discount rate can be estimated either by raising it to the level at which financial benefits equal costs, which is then the internal rate of return, or by setting the discount rate at a rate that takes into consideration the risk involved in the investment, which is then a net present value calculation, with the gains expressed in monetary units.

The econometric approach taken in labour economics originates from Mincer (1974). In this approach, returns to education are estimated in a regression relating earnings to years of education, labour market experience and tenure. This basic model has been extended in subsequent work to include educational levels, employment effects and additional control variables such as gender and work characteristics (part-time, firm size, contracting arrangements, utilisation of skills, etc.). The drawback of a regression approach is typically the scarcity of information beyond gross earnings to determine public and private returns, which makes it difficult to assess the actual incentives for individuals to invest in education.

Apart from availability of data, the main difference between the two approaches is that the investment approach is forward-looking (although historical data are typically used), whereas an econometric approach tries to establish the actual contribution of education to gross earnings by controlling for other factors that can influence earnings and returns. This distinction has implications for the assumptions and for the interpretation of returns to education. As the investment approach focuses on the incentives at the time of the investment decision, it is prudent not to remove the effects of (controlling for) other factors such as work characteristics, as these are not known ex-ante and could be seen as part of the average returns that an individual can expect to receive when deciding to invest in education.

Depending on the impact of the control variables and how steep the earnings curves are, the results of the two approaches can diverge quite substantially. Returns may differ within discounting models, too, depending on other underlying assumptions, the size of cash flows and how these are distributed over the life span. It is therefore generally not advisable to compare rates of return from different approaches or studies.

Tertiary education brings substantial net returns for men in Portugal and the United States, where an investment generates over USD 300 000 and thus provides a strong incentive to complete this level of education. This is the case for women in Portugal as well, where an investment generates over USD 200 000. The returns on tertiary education are lower in Denmark, Estonia, New Zealand, Sweden and Turkey, where a man with a tertiary education can expect a net gain of between USD 52 000 and USD 74 000 over his working life. For women, the returns are lower in Denmark, Estonia, New Zealand and Sweden, where the

net gain ranges from USD 32 000 to USD 47 000. Much of the difference between countries is driven by earnings differentials. Factors such as supply and demand for highly educated individuals are important in some countries, while the overall reward structure in the labour market (overall wage compression) plays an important role in other countries.

One way to mitigate weak labour market returns is to provide higher education at lower costs for the individual. Apart from subsidising the direct costs of education, a number of countries also provide students with loans and grants to improve incentives and access to education. Grants are particularly important in Austria, Finland, and the Netherlands, where they account for between 14% and 15% of the total private investment cost (direct costs and foregone earnings) for both men and women (Table A9.3). In Denmark, about 45% of the total private investment is covered by government grants.

Many countries also have favourable and substantial student loans that further lower investment costs and make investing more attractive. Both grants and loans are particularly important tools for recruiting students from less affluent backgrounds. There is, of course, a danger in focusing only on the supply side of the investment. As younger generations become more mobile, a reward structure that does not adequately compensate more highly educated individuals could eventually lead to a loss of these individuals to countries with higher earnings potentials.

There are some trade-offs between taxes and the direct costs of education (tuition fees) that are linked to government support for higher education. In countries with low or no tuition fees, individuals typically pay back public subsidies later in life through progressive tax systems. In countries in which a larger portion of the investment falls on the individual, in the form of tuition fees, earnings differentials tend to be larger, and a larger portion of them accrues to the individual. In general there is a positive link, albeit a weak one, between the private direct costs of education and the overall net present value of the education.

Public rate of return on investments in education

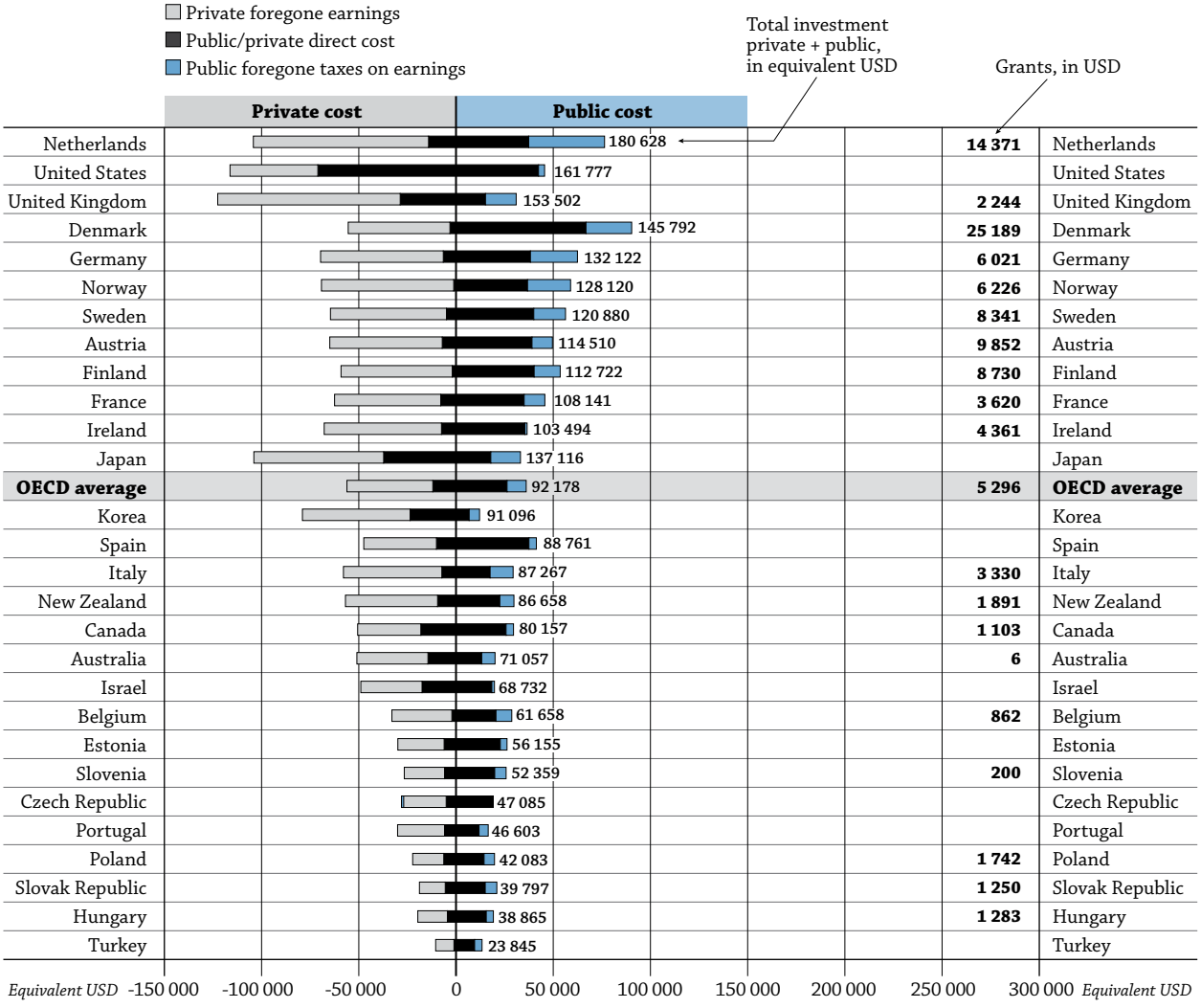
Tables A9.2 and A9.4 show the public returns to individuals who obtain upper secondary or post-secondary non-tertiary and tertiary education as part of initial education. Chart A9.4 shows the public and private costs for men who obtain tertiary education. On average across OECD countries, over USD 92 000 is invested in a man's tertiary education, taking into account public and private spending, as well as indirect costs in the form of public and private foregone earnings and taxes. In the Netherlands, the United Kingdom and the United States, the value of the investment exceeds USD 150 000 (Chart A9.4).

Direct costs for education are generally borne by the public sector, except in Australia, Japan, Korea, the United Kingdom and the United States, where private direct costs such as tuition fees constitute over half of the overall direct investment costs. Together with foregone public earnings in the form of taxes and social contributions, direct and indirect public investment costs for a man with a tertiary education exceed USD 50 000 in Denmark, Finland, Germany, the Netherlands, Norway and Sweden. In Korea and Turkey, the total public investment cost does not exceed USD 15 000. On average among OECD countries, the total value of the public costs for a man who obtains a tertiary qualification is around USD 36 000 (Table A9.4).

Although public investments in tertiary education are large in many countries, private investment costs are larger in most countries. In the Netherlands, the United Kingdom and the United States, both men and women invest over USD 100 000, on average, to acquire a tertiary qualification, when direct and indirect costs are taken into account. On average across OECD countries, direct costs, such as tuition fees, constitute about one-fifth of the total investment made by a tertiary graduate. In the United States, direct costs represent more than 60% of the investment and in Canada, Israel and Japan, between 35% and 43%, depending on the gender of the individual (Table A9.3).

The decision to continue education at the tertiary level is a difficult one to take, since much is at stake, particularly for young individuals from less affluent backgrounds. To alleviate the financial burden, most countries provide grants to students. These are particularly large in Denmark (USD 25 200) and the Netherlands (USD 14 400).

Chart A9.4. Public versus private investment for a man obtaining tertiary education, ISCED 5/6 (2008 or latest available year)



Notes: Australia, Belgium and Turkey refer to 2005. Portugal refers to 2006. Japan and Slovenia refer to 2007. All other countries refer to 2008. Cashflows are discounted at a 3% interest rate.

Countries are ranked in descending order of the total public + private cost.

Source: OECD. Tables A9.3 and A9.4. See Annex 3 for notes (*www.oecd.org/edu/eag2012*).

StatLink http://dx.doi.org/10.1787/888932662257

Note that these grants are not included in the private and public costs shown in Chart A9.4 but are displayed to illustrate the magnitude of these transfers between the private and public side. With the substantial private and public gains from tertiary investments, financial support in the form of grants and loans are important to ensure that financial constrains do not prevent people from making these investments.

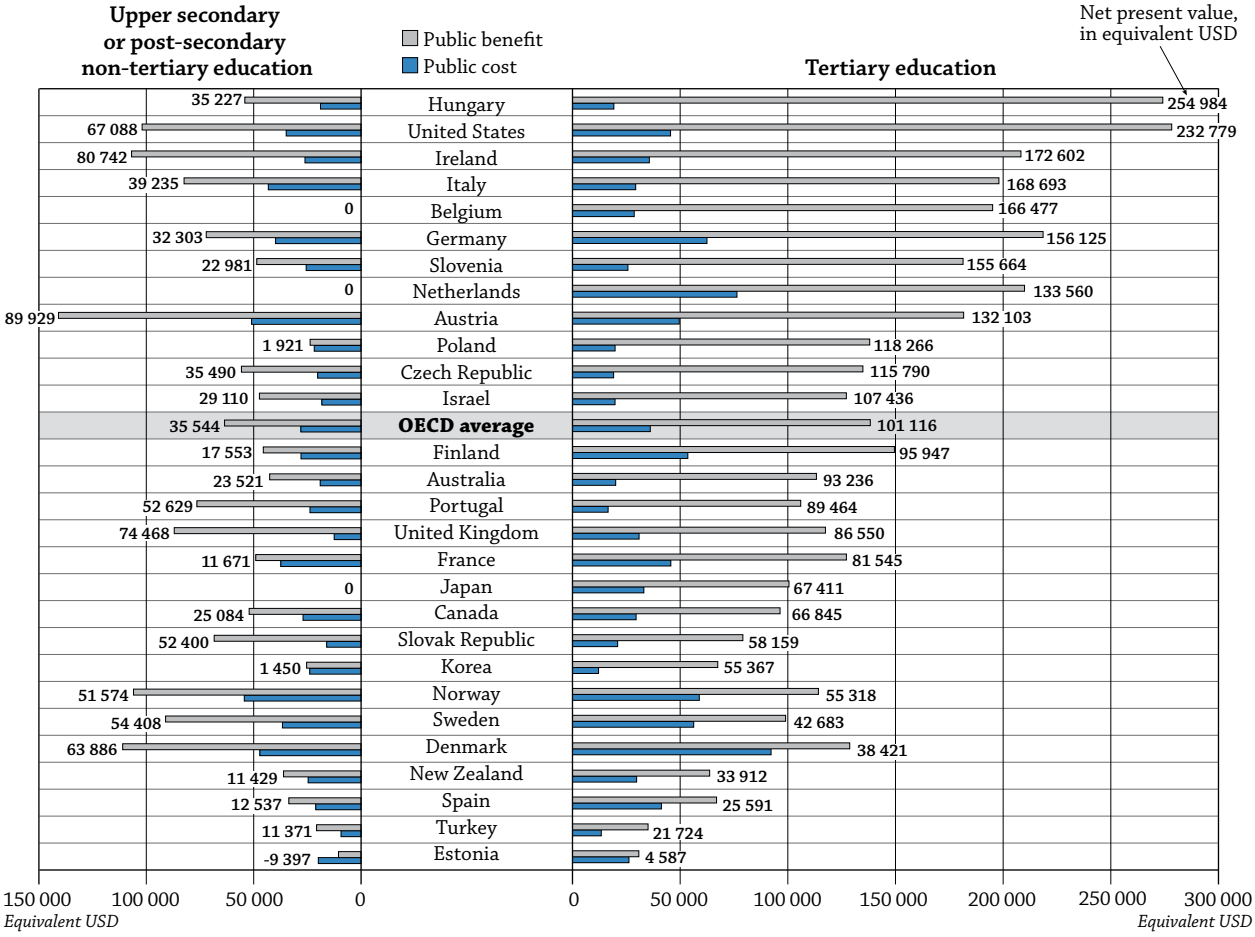
For an individual, foregone earnings make up a substantial part of overall investment costs. In countries with lengthy tertiary education, such as Finland, Germany, the Netherlands and Sweden, foregone earnings are large (see Indicator B1). Earnings foregone also depend on expected wage levels and the probability of finding a job. As the labour market for young adults worsens (see Indicator C5), investment costs will fall. As higher-educated people typically fare better in the labour market in times of economic hardship (see Indicator A7), larger earnings differentials further improve the benefit side. The incentives to invest in education from both the private and public side are likely to be greater in most OECD countries as the analysis in this indicator moves beyond 2008 and considers subsequent years of the global economic crisis.

A9

Investments in education also generate public returns from higher income levels in the form of income taxes, increased social insurance payments and lower social transfers. Chart A9.5 compares the public costs and economic benefits when a man invests in upper secondary or post-secondary non-tertiary education and in tertiary education.

The public returns for a man investing in upper secondary or post-secondary non-tertiary education are positive in all countries except Estonia. On average across OECD countries, this level of education generates a net return of USD 36 000. In Austria, Ireland and the United Kingdom, it generates a net return of more than USD 70 000. The public returns to a woman investing in this level of education are USD 14 000 less than for a man, on average across OECD countries (Table A9.2). Nonetheless, the public benefits are about twice as large, on average, as the overall public costs for upper secondary or post-secondary non-tertiary education, for both men and women. In a few countries, students need to continue beyond upper secondary or post-secondary non-tertiary education for the public sector to reap the full benefits.

Chart A9.5. Public cost and benefits for a man obtaining upper secondary or post-secondary non-tertiary education and tertiary education (2008 or latest available year)



Notes: Japan is not included in the left-hand side of the chart because the data at lower and upper secondary levels of education are not broken down. Belgium and the Netherlands are not included in the left-hand side of the chart because upper secondary education is compulsory.
Australia and Turkey refer to 2005; Portugal refers to 2006. Japan and Slovenia refer to 2007. All other countries refer to 2008.
Cashflows are discounted at a 3% interest rate.

Countries are ranked in descending order of the net present value at tertiary level of education.

Source: OECD, Tables A9.2 and A9.4. See Annex 3 for notes (*www.oecd.org/edu/eag2012*).

StatLink http://dx.doi.org/10.1787/888932669040

The public returns to tertiary education are substantially larger than the public returns to upper secondary or post-secondary non-tertiary education, in part because a larger share of the investment costs are borne by the individuals themselves. The main contributing factors are, however, the higher taxes and social contributions that flow from the higher income levels of those with tertiary qualifications. In Hungary and the United States, these benefits exceed USD 260 000 over an individual's working life (Table A9.4 and Chart A9.5).

On average across OECD countries, the net public return on an investment in tertiary education is over USD 100 000 for a man and over USD 52 000 for a woman at this level of education. Even after taking into account student grants, the public benefits outweigh the costs by a factor of three for men and a factor of two for women, on average. In Hungary, the benefits are 14 times larger than the public sector's initial investment in a man's tertiary education.

Returns on investments, taxation and labour market rewards

Overall wage dispersion drives much of the returns for both the individual and the public sector. A compressed wage structure will typically generate lower returns to higher education. This is particularly true in the Nordic countries, Denmark, Norway and Sweden, and in New Zealand. The Nordic countries have generally offset the effects of this weak reward structure by providing a higher education system almost free of charge and by having a generous student-grant system (see Indicator B5); New Zealand has shared some of the direct costs with the individual and has kept income taxes low.

A number of countries have substantially larger overall income inequality, which is also reflected in the gross earnings benefits for those with tertiary education. In some countries with overall lower cost structures, supply and demand appears to drive earnings differentials.

Although overall costs and income levels are low in the Czech Republic, Hungary, Poland, Portugal and Slovenia, higher education generates a substantially larger gross earnings premium over an individual's working life than in the previous group of countries. Tertiary attainment levels in the working-age population are considerably below the OECD average (see Indicator A1), and the earnings premiums for tertiary-educated individuals are above the OECD average (see Indicator A8). This suggests a short supply of higher-educated individuals, which has driven up wages and overall wage inequality over the years. As a result, individuals in these countries have strong incentives to make further investments in education, a premise that is supported by the increasingly high entry rates into tertiary education in these countries (see Indicator C3). Given the likelihood that the demand for more highly educated workers will continue to grow in these countries, it will take some time before a balance is reached.

Because earnings premiums and gross earnings benefits vary substantially among OECD countries, tax payments and benefits to the public sector also vary in ways that are somewhat contradictory to common perception. Due to low earnings premiums in the Nordic countries, average tertiary earnings are typically below the income bracket where high marginal taxes are levied. Instead, the largest public gains in tax and social security benefits from higher education typically occur in countries where earnings differentials are large, or where average earnings levels reach high income-tax brackets.

The additional taxes and social contributions paid by those with a tertiary education are large in Germany, Hungary, the Netherlands and the United States, for example, stressing the importance for public policy to take a broad approach to strategic decisions on educational investments. Taxation and social policies also play an important role in promoting the supply of labour and are thus key to reaping the full benefits of the investments made in education.

It is important to note, however, that a number of countries have tax policies that effectively lower the actual tax paid by individuals, particularly by those in high income brackets. Tax relief for interest payments on mortgage debt has been introduced in many OECD countries to encourage homeownership. These benefits essentially favour those with higher education and high marginal taxes. The tax incentives for housing are particularly large in the Czech Republic, Denmark, Finland, Greece, the Netherlands, Norway, Sweden and the United States. For further information, see Andrews, et al. (2011).

Methodology

In calculating the returns to education, the approach taken here is the **net present value (NPV)** of the investment. In this framework, lifetime costs and benefits 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 set rate of interest (discount rate). The choice of interest rate is difficult, 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. To keep things simple, and to make the interpretation of results easier, the same discount rate is applied across all OECD countries.

To arrive at a reasonable discount rate, long-term government bonds have been used as a benchmark. The average long-term interest rate across OECD countries was approximately 4.9% in 2008. Assuming that countries' central banks have succeeded in anchoring inflation expectations at or below 2% per year, a long-term nominal interest rate of 4.9% implies a real interest rate of 2.5% to 3%. The 3% real discount rate used in this indicator reflects the fact that calculations are made in constant prices. The change in the discount rate since the 2009 edition of *Education at a Glance* has a substantial impact on the net present value of education, and that must be taken into account if returns are compared across different editions of the publication.

Discounting the costs and benefits to the present value with this interest rate makes the financial returns on the overall investment and values of the different components comparable across time and countries. Using the same unit of analysis also has the advantage of making it possible to add or subtract components across different educational levels or between the private and public sectors to understand how different factors interact.

NPV calculations are based on the same method as **internal rate of return (IRR)** calculations. The main difference between the two methods lies in how the interest rate is set. For calculations developed within the IRR framework, the interest rate is raised to the level at which the economic benefits equal the cost of the investment and it pinpoints the discount rate at which the investment breaks even.

In calculating the NPV, private investment costs include after-tax foregone earnings adjusted for the probability of finding a job (unemployment rate) and direct private expenditures on education. Both of these investment streams take into account the duration of studies. On the benefit side, age-earnings profiles are used to calculate the earnings differential between different educational groups (below upper secondary education; upper secondary or post-secondary non-tertiary education; and tertiary education).

These gross earnings differentials are adjusted for differences in income taxes, social contributions and social transfers, including housing benefits and social assistance related to earnings level, to arrive at net earnings differentials. The cash flows are further adjusted for probability of finding a job (unemployment rates). The calculations are done separately for men and women to account for differences in earnings differentials and unemployment rates.

In calculating public NPV, public costs include lost tax receipts during the years of schooling (income tax and social contributions) and public expenditures, taking into account the duration of studies. Lost tax receipts are low in some countries because young individuals have low earnings levels. Public expenditures on education include direct expenditures, such as payment of teachers' salaries or spending for the construction of school buildings, purchase of textbooks, etc., and public-private transfers, such as public subsidies to households for scholarships and other grants and to other private entities for providing training at the workplace, etc. The benefits for the public sector are additional tax and social contribution receipts associated with higher earnings and savings on transfers, i.e. housing benefits and social assistance that the public sector does not have to pay because of higher levels of earnings.

It is important to consider some of the broad **conceptual limitations** on the estimates of financial returns discussed here:

- The data reported are accounting-based values only. The results no doubt differ from econometric estimates that would use the same data on the micro level rather than a lifetime stream of earnings derived from average earnings.

- The approach used here estimates future earnings for individuals with different levels of educational attainment, based on knowledge of how average present gross earnings vary by level of attainment and age. However, the relationship between different levels of educational attainment and earnings may differ in the future. Technological, economic and social changes may all alter how wage levels relate to levels of educational attainment.
- Differences in returns across countries partly reflect different institutional and non-market conditions that bear on earnings, such as institutional conditions that limit flexibility in relative earnings.
- In estimating benefits, the effect of education on the likelihood of finding employment when wanting to work is taken into account. However, this also makes the estimate sensitive to the stage in the economic cycle at which the data are collected. As more highly educated individuals typically have a stronger attachment to the labour market, the value of education generally increases in times of poor economic growth.

The calculations also involve a number of restrictive assumptions needed for international comparability. For calculating the investments in education, foregone earnings have been standardised at the level of the legal minimum wage or the equivalent in countries in which earnings data include part-time work. When no national minimum wage was available, the wage was selected from wages set in collective agreements. This assumption aims to counterbalance the very low earnings recorded for 15-24 year-olds that led to excessively high estimates in earlier editions of *Education at a Glance*. In the Czech Republic, Hungary, Japan, the Netherlands, Portugal and the United Kingdom, actual earnings are used in calculating foregone earnings, as part-time work is excluded in these earnings data collections.

For the methods employed for calculating the rates of return, please see Annex 3 at *www.oecd.org/edu/eag2012*

Cost and benefits for upper secondary or post-secondary non-tertiary education cannot be computed for Belgium and the Netherlands because upper secondary education is compulsory in both countries. The fact that upper secondary education is compulsory in these countries prevents a consistent application of the methodology for this indicator, because it uses an investment approach. The investment approach assumes that individuals make a choice to invest in a given level of education in order to obtain the benefits. In countries where a particular level of education is compulsory, individuals do not face this choice, thereby making the methodology inapplicable in such instances.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. 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.

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A9

Table A9.1. [1/2] Private net present value and internal rate of return for an individual obtaining upper secondary or post-secondary non-tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
								Per man					
OECD	Australia	2005	-2 891	-22 748	**-25 639**	103 116	-41 661	0	-886	42 163	**102 731**	77 092	14.2%
OECD	Austria	2008	-1 801	-45 844	**-47 645**	284 884	-73 822	-59 487	-7 587	35 029	**179 017**	131 372	12.4%
OECD	Belgium[1]												
OECD	Canada	2008	-3 142	-28 731	**-31 873**	136 984	-42 770	-10 510	-385	38 762	**122 081**	90 208	13.6%
OECD	Chile		m	m	**m**	m	m	m	m	m	**m**	m	m
OECD	Czech Republic	2008	-2 142	-17 517	**-19 659**	108 257	-31 801	-23 905	0	83 688	**136 240**	116 581	21.2%
OECD	Denmark	2008	-746	-36 225	**-36 971**	187 370	-80 160	-17 256	-13 571	19 357	**95 739**	58 768	11.2%
OECD	Estonia	2008	-190	-12 503	**-12 693**	31 071	-9 246	-1 260	0	17 586	**38 151**	25 458	9.1%
OECD	Finland	2008	-210	-30 193	**-30 403**	77 946	-31 681	-6 879	-6 961	31 518	**63 943**	33 540	8.4%
OECD	France	2008	-2 632	-29 772	**-32 404**	114 056	-24 881	-20 862	-3 284	37 503	**102 532**	70 129	10.7%
OECD	Germany	2008	-3 877	-35 678	**-39 555**	63 972	-27 911	-29 948	-14 223	79 490	**71 380**	31 825	6.7%
OECD	Greece		m	m	**m**	m	m	m	m	m	**m**	m	m
OECD	Hungary	2008	-880	-13 073	**-13 953**	73 813	-34 401	-19 706	0	42 510	**62 216**	48 263	15.2%
OECD	Iceland		m	m	**m**	m	m	m	m	m	**m**	m	m
OECD	Ireland	2008	-620	-32 896	**-33 515**	243 036	-89 225	-17 630	0	60 310	**196 490**	162 975	14.7%
OECD	Israel	2008	-1 266	-30 056	**-31 322**	143 387	-28 405	-18 920	0	26 841	**122 903**	91 581	9.7%
OECD	Italy	2008	-986	-43 886	**-44 872**	177 073	-63 514	-18 903	0	22 519	**117 174**	72 302	8.1%
OECD	Japan[2]												
OECD	Korea	2008	-6 069	-25 378	**-31 447**	171 945	-8 892	-16 444	0	45 808	**192 417**	160 970	16.5%
OECD	Luxembourg		m	m	**m**	m	m	m	m	m	**m**	m	m
OECD	Mexico		m	m	**m**	m	m	m	m	m	**m**	m	m
OECD	Netherlands[1]												
OECD	New Zealand	2008	-3 244	-33 866	**-37 111**	93 186	-33 648	-1 463	-971	20 258	**77 362**	40 251	7.3%
OECD	Norway	2008	-2 859	-53 840	**-56 699**	248 839	-80 412	-22 351	-3 187	38 016	**180 905**	124 206	11.9%
OECD	Poland	2008	-916	-16 602	**-17 518**	53 311	-6 965	-16 753	0	24 689	**54 282**	36 764	10.3%
OECD	Portugal	2006	-12	-23 445	**-23 456**	212 846	-53 287	-23 133	0	-3 353	**133 074**	109 618	11.5%
OECD	Slovak Republic	2008	-2 358	-6 324	**-8 682**	106 965	-37 696	-30 699	0	122 421	**160 991**	152 309	40.8%
OECD	Slovenia	2007	-2 176	-18 284	**-20 460**	111 618	-19 595	-28 948	0	19 307	**82 381**	61 921	12.1%
OECD	Spain	2008	-1 464	-12 551	**-14 015**	95 667	-25 708	-7 912	0	28 987	**91 035**	77 020	11.4%
OECD	Sweden	2008	-21	-29 425	**-29 446**	174 618	-55 711	-15 255	-20 046	42 499	**126 105**	96 659	14.9%
OECD	Switzerland		m	m		m	m	m	m	m	**m**	m	m
OECD	Turkey	2005	-336	-11 218	**-11 554**	63 318	-10 584	-10 115	0	4 017	**46 637**	35 082	9.5%
OECD	United Kingdom	2008	-4 880	-33 603	**-38 483**	218 579	-50 129	-27 713	-9 149	46 772	**178 360**	139 877	12.5%
OECD	United States	2008	-2 888	-26 755	**-29 643**	292 656	-70 774	-25 846	-5 325	45 392	**236 104**	206 461	20.2%
	OECD average		-1 944	-26 817	**-28 761**	143 540	-41 315	-18 876	-3 423	38 884	**118 810**	90 049	13.4%
	EU21 average		-1 524	-25 754	**-27 278**	137 358	-42 102	-21 544	-4 401	41 814	**111 124**	83 846	13.6%

Note: Values are based on the difference between people who attained an upper secondary or post-secondary non tertiary education compared with those who have not attained that level of education.

1. Belgium and the Netherlands are not included in the table because upper secondary education is compulsory.
2. Japan is not included in the table because the data at the lower and upper secondary levels of education are not broken down.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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

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Table A9.1. [2/2] Private net present value and internal rate of return for an individual obtaining upper secondary or post-secondary non-tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
								Per woman					
OECD	Australia	2005	-2 891	-23 470	**-26 361**	88 809	-28 020	0	-17 611	23 261	**66 440**	40 079	11.3%
	Austria	2008	-1 801	-44 864	**-46 665**	188 626	-29 485	-43 040	-22 993	29 567	**122 675**	76 010	9.3%
	Belgium[1]												
	Canada	2008	-3 142	-29 730	**-32 871**	109 365	-23 190	-11 278	-2 192	19 739	**92 443**	59 572	8.8%
	Chile		m	m	**m**	m	m	m	m	m	**m**	m	m
	Czech Republic	2008	-2 142	-15 950	**-18 092**	97 445	-26 652	-20 933	0	69 776	**119 635**	101 543	21.8%
	Denmark	2008	-746	-35 265	**-36 011**	137 856	-50 090	-12 363	0	10 066	**85 469**	49 458	9.6%
	Estonia	2008	-180	-10 993	**-11 173**	46 597	-11 311	-1 535	0	12 466	**46 217**	35 044	20.9%
	Finland	2008	-210	-30 803	**-31 013**	54 469	-17 246	-5 083	-15 568	26 412	**42 985**	11 972	4.9%
	France	2008	-2 632	-28 347	**-30 980**	108 028	-19 605	-19 025	-10 229	31 096	**90 265**	59 285	9.4%
	Germany	2008	-3 877	-35 784	**-39 662**	122 989	-31 876	-34 864	-36 714	43 778	**63 313**	23 651	5.8%
	Greece		m	m	**m**	m	m	m	m	m	**m**	m	m
	Hungary	2008	-880	-12 304	**-13 184**	85 252	-32 820	-21 045	0	38 518	**69 905**	56 721	16.3%
	Iceland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Ireland	2008	-620	-36 155	**-36 775**	218 100	-23 313	-16 064	0	19 774	**198 498**	161 723	23.5%
	Israel	2008	-1 266	-29 067	**-30 333**	107 391	-6 276	-6 332	-82	16 175	**110 876**	80 544	9.7%
	Italy	2008	-986	-38 624	**-39 610**	152 167	-51 238	-17 293	0	29 983	**113 620**	74 010	8.4%
	Japan[2]												
	Korea	2008	-6 069	-25 021	**-31 090**	71 331	-1 971	-9 207	0	50 039	**110 192**	79 101	12.5%
	Luxembourg		m	m	**m**	m	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	m	**m**	m	m
	Netherlands[1]												
	New Zealand	2008	-3 244	-33 447	**-36 691**	81 687	-19 232	-1 205	-10 028	11 252	**62 474**	25 783	6.1%
	Norway	2008	-2 859	-54 055	**-56 914**	149 381	-41 441	-13 140	-13 729	20 335	**101 406**	44 492	6.3%
	Poland	2008	-916	-14 879	**-15 794**	74 416	-8 271	-19 448	0	16 433	**63 130**	47 335	10.5%
	Portugal	2006	-12	-20 631	**-20 642**	150 215	-31 104	-17 731	0	10 416	**111 796**	91 153	11.7%
	Slovak Republic	2008	-2 358	-4 464	**-6 822**	81 611	-27 655	-22 522	0	87 101	**118 534**	111 712	42.8%
	Slovenia	2007	-2 176	-18 557	**-20 733**	118 292	-16 877	-28 104	-708	9 009	**81 612**	60 879	11.3%
	Spain	2008	-1 464	-11 638	**-13 102**	127 362	-23 551	-9 849	0	28 607	**122 569**	109 467	20.4%
	Sweden	2008	-21	-29 252	**-29 273**	132 070	-42 495	-12 280	-28 046	43 892	**93 141**	63 868	10.6%
	Switzerland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Turkey	2005	-336	-12 058	**-12 394**	75 879	-8 395	-9 432	0	-12 434	**45 618**	33 223	9.2%
	United Kingdom	2008	-4 880	-34 465	**-39 345**	110 415	-27 011	-15 010	-35 051	39 416	**72 759**	33 414	6.6%
	United States	2008	-2 888	-27 307	**-30 195**	229 708	-43 137	-19 464	-10 332	24 981	**181 756**	151 561	17.8%
	OECD average		-1 944	-26 285	**-28 229**	116 778	-25 690	-15 450	-8 131	27 986	**95 493**	67 264	13.0%
	EU21 average		-1 944	-26 285	**-28 229**	116 778	-25 690	-15 450	-8 131	27 986	**95 493**	67 264	13.0%

Note: Values are based on the difference between people who attained an upper secondary or post-secondary non tertiary education compared with those who have not attained that level of education.

1. Belgium and the Netherlands are not included in the table because upper secondary education is compulsory.
2. Japan is not included in the table because the data at the lower and upper secondary levels of education are not broken down.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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

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A9

Table A9.2. [1/2] Public net present value and internal rate of return for an individual obtaining upper secondary or post-secondary non-tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone taxes on earnings	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
							Per man					
OECD	Australia	2005	-14 757	-4 270	**-19 027**	32 427	0	886	9 234	**42 548**	23 521	8.0%
	Austria	2008	-42 641	-8 326	**-50 967**	69 564	53 202	7 587	10 543	**140 896**	89 929	9.4%
	Belgium[1]											
	Canada	2008	-23 735	-3 282	**-27 018**	35 892	7 681	374	8 155	**52 101**	25 084	6.5%
	Chile		m	m	**m**	m	m	m	m	**m**	m	m
	Czech Republic	2008	-20 272	56	**-20 215**	21 869	13 500	0	20 336	**55 705**	35 490	9.9%
	Denmark	2008	-30 821	-16 280	**-47 102**	74 608	15 050	13 571	7 758	**110 987**	63 886	8.4%
	Estonia	2008	-18 086	-1 817	**-19 902**	6 334	805	0	3 367	**10 506**	-9 397	0.3%
	Finland	2008	-20 895	-7 073	**-27 968**	25 458	4 927	6 961	8 175	**45 521**	17 553	6.7%
	France	2008	-31 556	-5 799	**-37 355**	20 634	15 760	3 284	9 349	**49 027**	11 671	4.4%
	Germany	2008	-26 098	-13 681	**-39 779**	15 256	13 631	14 223	28 972	**72 082**	32 303	8.4%
	Greece		m	m	**m**	m	m	m	m	**m**	m	m
	Hungary	2008	-15 738	-3 142	**-18 880**	27 606	12 527	0	13 974	**54 107**	35 227	9.3%
	Iceland		m	m	**m**	m	m	m	m	**m**	m	m
	Ireland	2008	-25 948	-164	**-26 113**	82 207	14 857	0	9 790	**106 855**	80 742	9.3%
	Israel	2008	-16 918	-1 298	**-18 216**	26 378	17 092	0	3 855	**47 325**	29 110	6.9%
	Italy	2008	-32 919	-10 264	**-43 183**	59 003	16 776	0	6 638	**82 418**	39 235	6.0%
	Japan[2]											
	Korea	2008	-21 272	-2 614	**-23 887**	8 106	12 993	0	4 237	**25 337**	1 450	3.3%
	Luxembourg		m	m	**m**	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	**m**	m	m
	Netherlands[1]											
	New Zealand	2008	-19 455	-5 198	**-24 653**	29 331	1 201	971	4 578	**36 082**	11 429	4.9%
	Norway	2008	-36 851	-17 525	**-54 376**	72 824	19 403	3 187	10 537	**105 950**	51 574	7.2%
	Poland	2008	-16 232	-5 565	**-21 797**	5 188	11 477	0	7 053	**23 718**	1 921	3.4%
	Portugal	2006	-19 937	-3 854	**-23 791**	53 798	23 500	0	-879	**76 420**	52 629	7.7%
	Slovak Republic	2008	-13 158	-2 837	**-15 995**	17 648	14 372	0	36 375	**68 395**	52 400	15.0%
	Slovenia	2007	-20 398	-5 164	**-25 562**	17 749	24 705	0	6 089	**48 543**	22 981	6.2%
	Spain	2008	-19 800	-1 282	**-21 083**	23 319	6 085	0	4 216	**33 620**	12 537	4.7%
	Sweden	2008	-28 557	-8 046	**-36 603**	46 631	12 302	20 046	12 033	**91 012**	54 408	13.5%
	Switzerland		m	m	**m**	m	m	m	m	**m**	m	m
	Turkey	2005	-4 776	-4 551	**-9 327**	9 997	9 514	0	1 188	**20 699**	11 371	6.4%
	United Kingdom	2008	-17 187	4 665	**-12 522**	43 564	23 960	9 149	10 317	**86 990**	74 468	20.6%
	United States	2008	-33 006	-1 851	**-34 857**	64 903	22 394	5 325	9 323	**101 944**	67 088	9.6%
	OECD average		-22 841	-5 166	**-28 007**	35 612	14 709	3 422	9 809	**63 551**	35 544	7.8%
	EU21 average		-23 544	-5 210	**-28 754**	35 908	16 320	4 401	11 418	**68 047**	39 293	8.4%

Note: Values are based on the difference between people who attained an upper secondary or post-secondary non tertiary education compared with those who have not attained that level of education.

1. Belgium and the Netherlands are not included in the table because upper secondary education is compulsory.
2. Japan is not included in the table because the data at the lower and upper secondary level of education are not broken down.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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

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Table A9.2. [2/2] Public net present value and internal rate of return for an individual obtaining upper secondary or post-secondary non-tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone taxes on earnings	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Total benefits	Net present value	Internal rate of return
							Per woman					
OECD	Australia	2005	-14 757	-4 405	**-19 163**	23 936	0	17 611	4 084	**45 630**	26 468	17.1%
	Austria	2008	-42 641	-8 148	**-50 789**	28 780	37 860	22 993	5 886	**95 519**	44 729	7.2%
	Belgium[1]											
	Canada	2008	-24 447	-3 498	**-27 946**	21 740	9 998	2 192	2 731	**36 661**	8 715	4.2%
	Chile		m	m	**m**	m	m	m	m	**m**	m	m
	Czech Republic	2008	-20 272	51	**-20 221**	19 849	12 252	0	15 484	**47 586**	27 365	8.7%
	Denmark	2008	-30 821	-15 849	**-46 670**	47 639	11 027	0	3 787	**62 453**	15 783	4.9%
	Estonia	2008	-17 047	-1 597	**-18 645**	9 543	1 213	0	2 090	**12 846**	-5 799	0.7%
	Finland	2008	-20 895	-7 216	**-28 111**	12 908	3 450	15 568	5 971	**37 896**	9 786	5.8%
	France	2008	-31 556	-5 522	**-37 078**	16 827	14 808	10 229	6 994	**48 859**	11 781	4.4%
	Germany	2008	-26 098	-13 722	**-39 820**	28 195	25 933	36 714	12 612	**103 454**	63 634	10.6%
	Greece		m	m	**m**	m	m	m	m	**m**	m	m
	Hungary	2008	-15 738	-2 957	**-18 696**	27 536	14 539	0	11 789	**53 865**	35 169	8.9%
	Iceland		m	m	**m**	m	m	m	m	**m**	m	m
	Ireland	2008	-25 948	-181	**-26 129**	22 747	15 644	0	985	**39 377**	13 247	4.9%
	Israel	2008	-16 918	-1 255	**-18 173**	6 031	5 694	82	883	**12 690**	-5 483	1.8%
	Italy	2008	-32 919	-9 033	**-41 952**	47 153	14 467	0	6 910	**68 530**	26 578	5.2%
	Japan[2]											
	Korea	2008	-21 272	-2 513	**-23 785**	1 607	5 442	0	4 129	**11 178**	-12 606	-0.5%
	Luxembourg		m	m	**m**	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	**m**	m	m
	Netherlands[1]											
	New Zealand	2008	-19 455	-5 133	**-24 589**	17 143	1 060	10 028	2 235	**30 465**	5 877	4.1%
	Norway	2008	-36 851	-17 595	**-54 446**	38 484	11 570	13 729	4 528	**68 310**	13 865	4.5%
	Poland	2008	-16 232	-4 987	**-21 219**	7 206	15 942	0	4 571	**27 719**	6 500	4.2%
	Portugal	2006	-19 937	-2 842	**-22 779**	30 147	16 590	0	2 098	**48 835**	26 056	6.1%
	Slovak Republic	2008	-13 158	-2 003	**-15 160**	13 424	10 932	0	25 821	**50 177**	35 017	12.6%
	Slovenia	2007	-20 398	-5 241	**-25 639**	16 274	26 130	708	2 577	**45 690**	20 050	5.8%
	Spain	2008	-19 800	-1 189	**-20 989**	22 400	8 051	0	2 950	**33 400**	12 411	4.7%
	Sweden	2008	-28 557	-7 999	**-36 556**	33 919	9 236	28 046	11 620	**82 821**	46 265	12.7%
	Switzerland		m	m	**m**	m	m	m	m	**m**	m	m
	Turkey	2005	-4 776	-4 892	**-9 668**	10 025	11 264	0	-3 463	**17 827**	8 159	5.8%
	United Kingdom	2008	-17 187	2 255	**-14 932**	22 136	12 175	35 051	7 710	**77 072**	62 140	13.2%
	United States	2008	-33 006	-1 889	**-34 895**	41 060	17 570	10 332	3 971	**72 932**	38 037	7.6%
	OECD average		-22 828	-5 094	**-27 922**	22 668	12 514	8 131	5 958	**49 272**	21 350	6.6%
	EU21 average		-23 483	-5 069	**-28 552**	23 923	14 721	8 783	7 639	**55 065**	26 512	7.1%

Note: Values are based on the difference between people who attained an upper secondary or post-secondary non tertiary education compared with those who have not attained that level of education.

1. Belgium and the Netherlands are not included in the table because upper secondary education is compulsory.
2. Japan is not included in the table because the data at the lower and upper secondary level of education are not broken down.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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

StatLink http://dx.doi.org/10.1787/888932665544

A9

Table A9.3. [1/2] Private net present value and internal rate of return for an individual obtaining tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
			Per man											
OECD	Australia	2005	-14 426	-36 560	**-50 986**	278 519	-113 313	0	0	1 061	6	**166 273**	115 287	9.8%
	Austria	2008	-7 082	-57 842	**-64 924**	455 326	-139 387	-52 154	0	16 336	9 852	**289 972**	225 048	10.6%
	Belgium	2005	-2 133	-30 842	**-32 975**	330 066	-145 966	-50 056	0	14 294	862	**149 200**	116 225	12.0%
	Canada	2008	-18 094	-32 494	**-50 588**	284 705	-92 145	-5 371	0	15 816	1 103	**204 108**	153 520	10.8%
	Chile		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Czech Republic	2008	-5 062	-22 919	**-27 981**	405 482	-83 316	-51 577	0	7 072		**277 660**	249 679	19.7%
	Denmark	2008	-3 124	-52 320	**-55 444**	244 798	-130 076	-19 062	-4 821	-4 215	25 189	**111 813**	56 369	7.9%
	Estonia	2008	-6 117	-23 805	**-29 922**	124 705	-27 313	-3 507	0	10 250		**104 135**	74 213	0
	Finland	2008	-1 925	-57 211	**-59 136**	334 537	-135 987	-22 276	0	19 740	8 730	**204 744**	145 608	10.9%
	France	2008	-7 868	-54 588	**-62 456**	341 205	-86 399	-44 451	0	8 431	3 620	**222 406**	159 950	9.9%
	Germany	2008	-6 542	-63 113	**-69 654**	384 499	-151 331	-73 282	0	48 429	6 021	**214 336**	144 682	9.6%
	Greece		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Hungary	2008	-4 426	-15 223	**-19 649**	470 934	-190 103	-85 379	0	31 301	1 283	**228 035**	208 386	24.8%
	Iceland		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Ireland	2008	-7 482	-60 313	**-67 795**	475 563	-194 735	-17 926	0	24 353	4 361	**291 616**	223 821	12.8%
	Israel	2008	-17 469	-31 486	**-48 955**	313 487	-89 214	-37 998	0	6 263		**192 538**	143 582	10.3%
	Italy	2008	-7 285	-50 608	**-57 893**	408 011	-159 562	-41 835	0	3 295	3 330	**213 239**	155 346	8.1%
	Japan	2007	-37 215	-66 750	**-103 965**	326 614	-64 523	-36 039	0	20 931		**246 983**	143 018	7.4%
	Korea	2008	-23 592	-55 397	**-78 989**	321 520	-43 198	-24 275	0	14 708		**268 754**	189 766	9.3%
	Luxembourg		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Netherlands	2008	-14 113	-90 118	**-104 231**	455 296	-202 175	-22 153	0	4 778	14 371	**250 117**	145 886	7.9%
	New Zealand	2008	-9 476	-47 386	**-56 861**	172 607	-63 341	-2 254	-6	434	1 891	**109 332**	52 471	6.1%
	Norway	2008	-1 180	-68 022	**-69 202**	267 137	-99 740	-20 722	0	-1 623	6 226	**151 278**	82 076	6.1%
	Poland	2008	-6 291	-15 995	**-22 287**	367 019	-55 868	-83 937	0	23 960	1 742	**252 917**	230 630	23.4%
	Portugal	2006	-5 903	-24 146	**-30 050**	484 640	-77 432	-28 586	0	25 278		**403 901**	373 851	18.5%
	Slovak Republic	2008	-5 543	-13 269	**-18 812**	285 337	-41 848	-38 547	0	21 503	1 250	**227 695**	208 883	24.2%
	Slovenia	2007	-5 895	-20 705	**-26 600**	430 880	-97 103	-84 520	0	2 805	200	**252 262**	225 663	19.1%
	Spain	2008	-10 051	-37 385	**-47 436**	195 793	-53 120	-13 796	0	21 534		**150 411**	102 975	9.3%
	Sweden	2008	-4 913	-59 657	**-64 570**	221 486	-99 336	-7 997	0	3 530	8 341	**126 024**	61 454	6.4%
	Switzerland		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Turkey	2005	-1 061	-9 402	**-10 463**	106 985	-18 682	-16 424	0	2 761		**74 640**	64 177	19.3%
	United Kingdom	2008	-28 704	-93 851	**-122 555**	364 136	-82 074	-37 666	0	19 310	2 244	**265 949**	143 394	7.4%
	United States	2008	-71 053	-45 170	**-116 223**	674 277	-223 008	-55 326	0	49 832		**445 775**	329 552	11.5%
	OECD average		-11 929	-44 163	**-56 093**	340 199	-105 725	-34 897	-172	14 720	5 296	**217 718**	161 625	12.4%
	EU21 average		-7 307	-42 527	**-49 833**	352 609	-106 176	-41 559	-284	16 642	5 859	**225 713**	175 879	13.9%

Notes: Estonia estimate assumes duration of tertiary education is 5.5 years.

Values are based on the difference between people who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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

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Table A9.3. [2/2] Private net present value and internal rate of return for an individual obtaining tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone earnings	Total costs	Gross earnings benefits	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
								Per woman						
OECD	Australia	2005	-14 426	-36 510	**-50 936**	225 540	-74 614	0	0	15 136	6	**166 068**	115 132	11.8%
	Austria	2008	-7 082	-57 719	**-64 801**	309 444	-88 580	-57 804	0	10 068	9 852	**182 980**	118 179	8.6%
	Belgium	2005	-2 133	-29 666	**-31 799**	255 953	-103 549	-57 031	0	36 371	862	**132 606**	100 806	14.4%
	Canada	2008	-18 094	-33 461	**-51 555**	229 354	-59 998	-17 327	0	9 909	1 103	**163 042**	111 487	11.0%
	Chile		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Czech Republic	2008	-4 915	-22 214	**-27 129**	229 623	-49 088	-30 987	0	18 444		**167 992**	140 864	16.3%
	Denmark	2008	-3 124	-51 865	**-54 989**	146 733	-55 606	-12 209	-7 081	4 395	25 189	**101 420**	46 432	8.7%
	Estonia	2008	-6 117	-23 843	**-29 961**	91 458	-20 035	-2 591	0	8 254		**77 086**	47 125	9.6%
	Finland	2008	-1 925	-57 436	**-59 361**	203 311	-71 668	-13 866	-1 661	18 032	8 730	**142 879**	83 518	9.0%
	France	2008	-7 868	-52 263	**-60 131**	227 629	-45 923	-33 756	-84	19 076	3 620	**170 561**	110 430	9.4%
	Germany	2008	-6 542	-63 643	**-70 185**	266 912	-80 528	-60 157	-926	24 178	6 021	**155 499**	85 314	8.2%
	Greece		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Hungary	2008	-4 426	-14 717	**-19 143**	253 441	-110 971	-47 460	0	25 593	1 283	**121 885**	102 742	18.1%
	Iceland		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Ireland	2008	-7 482	-63 062	**-70 544**	341 156	-92 253	-29 519	0	10 885	4 361	**234 630**	164 087	11.5%
	Israel	2008	-17 469	-30 773	**-48 242**	177 689	-29 269	-20 793	0	16 951		**144 578**	96 336	9.9%
	Italy	2008	-7 285	-47 826	**-55 111**	223 811	-79 954	-21 986	0	7 563	3 330	**132 764**	77 652	6.9%
	Japan	2007	-37 215	-49 265	**-86 481**	231 306	-20 848	-29 117	0	9 951		**191 293**	104 812	7.8%
	Korea	2008	-23 592	-47 607	**-71 199**	205 230	-8 892	-18 027	0	31 992		**210 303**	139 104	9.7%
	Luxembourg		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Netherlands	2008	-14 113	-87 458	**-101 571**	339 338	-129 641	-30 381	0	9 467	14 371	**203 152**	101 581	7.0%
	New Zealand	2008	-9 476	-47 867	**-57 343**	123 296	-34 553	-1 645	-2 591	2 863	1 891	**89 261**	31 918	5.8%
	Norway	2008	-1 180	-68 812	**-69 992**	214 414	-60 617	-16 984	0	3 998	6 226	**147 038**	77 046	7.3%
	Poland	2008	-6 291	-15 058	**-21 350**	215 086	-24 687	-52 035	0	27 164	1 742	**167 270**	145 920	19.9%
	Portugal	2006	-5 903	-20 483	**-26 386**	355 880	-92 120	-36 253	0	9 848		**237 354**	210 968	18.4%
	Slovak Republic	2008	-5 543	-12 580	**-18 123**	183 917	-34 359	-27 821	0	24 459	1 250	**147 446**	129 323	20.8%
	Slovenia	2007	-5 895	-20 090	**-25 984**	319 493	-74 631	-74 593	0	22 535	200	**193 005**	167 020	17.7%
	Spain	2008	-10 051	-35 821	**-45 872**	235 494	-61 742	-16 761	0	28 175		**185 166**	139 293	11.3%
	Sweden	2008	-4 913	-59 179	**-64 092**	134 336	-39 174	-10 088	0	10 293	8 341	**103 709**	39 616	5.7%
	Switzerland		m	m	**m**	m	m	m	m	m	m	**m**	m	m
	Turkey	2005	-1 061	-8 185	**-9 246**	116 530	-21 267	-19 627	0	14 075		**89 711**	80 466	19.2%
	United Kingdom	2008	-28 704	-93 777	**-122 481**	352 964	-72 696	-40 014	-2 242	14 270	2 244	**254 525**	132 044	7.3%
	United States	2008	-71 053	-46 090	**-117 143**	389 714	-98 287	-31 645	0	25 624		**285 407**	168 264	8.8%
	OECD average		-11 924	-42 760	**-54 684**	235 680	-61 984	-28 946	-521	16 413	5 296	**164 237**	109 553	11.4%
	EU21 average		-7 298	-41 857	**-49 155**	240 629	-64 354	-33 406	-706	16 661	5 859	**163 304**	102 892	10.8%

Notes: Estonia estimate assumes duration of tertiary education is 5.5 years.

Values are based on the difference between people who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012).*

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

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A9

Table A9.4. [1/2] Public net present value and internal rate of return for an individual obtaining tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone taxes on earnings	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
							Per man						
OECD	Australia	2005	-13 209	-6 863	**-20 071**	112 914	0	0	400	-6	**113 307**	93 236	13.0%
	Austria	2008	-39 081	-10 505	**-49 586**	136 010	49 715	0	5 816	-9 852	**181 689**	132 103	8.8%
	Belgium	2005	-20 552	-8 132	**-28 684**	141 569	48 060	0	6 394	-862	**195 160**	166 477	14.8%
	Canada	2008	-25 745	-3 823	**-29 569**	89 048	4 483	0	3 985	-1 103	**96 413**	66 845	8.9%
	Chile		m	m	**m**	m	m	m	m	m	**m**	m	m
	Czech Republic	2008	-19 177	74	**-19 104**	82 126	50 695	0	2 073		**134 894**	115 790	16.2%
	Denmark	2008	-66 835	-23 514	**-90 349**	131 307	19 544	4 821	-1 713	-25 189	**128 770**	38 421	4.3%
	Estonia	2008	-22 774	-3 459	**-26 233**	25 505	3 242	0	2 073		**30 820**	4 587	4.0%
	Finland	2008	-40 184	-13 402	**-53 586**	130 540	21 044	0	6 680	-8 730	**149 533**	95 947	7.8%
	France	2008	-35 052	-10 633	**-45 686**	85 338	43 297	0	2 216	-3 620	**127 231**	81 545	7.5%
	Germany	2008	-38 267	-24 201	**-62 467**	139 891	63 980	0	20 742	-6 021	**218 592**	156 125	9.4%
	Greece		m	m	**m**	m	m	m	m	m	**m**	m	m
	Hungary	2008	-15 556	-3 659	**-19 215**	180 835	80 072	0	14 575	-1 283	**274 199**	254 984	27.2%
	Iceland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Ireland	2008	-35 397	-302	**-35 699**	189 708	16 765	0	6 188	-4 361	**208 300**	172 602	13.3%
	Israel	2008	-18 417	-1 360	**-19 776**	88 357	37 478	0	1 377		**127 213**	107 436	12.7%
	Italy	2008	-17 538	-11 836	**-29 374**	157 696	41 484	0	2 217	-3 330	**198 067**	168 693	10.1%
	Japan	2007	-17 897	-15 254	**-33 151**	62 285	33 612	0	4 665		**100 562**	67 411	8.4%
	Korea	2008	-6 770	-5 337	**-12 107**	42 363	23 177	0	1 934		**67 474**	55 367	11.6%
	Luxembourg		m	m	**m**	m	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	m	**m**	m	m
	Netherlands	2008	-37 382	-39 015	**-76 397**	201 244	21 220	0	1 863	-14 371	**209 957**	133 560	7.4%
	New Zealand	2008	-22 524	-7 273	**-29 797**	63 170	2 248	6	177	-1 891	**63 709**	33 912	6.3%
	Norway	2008	-36 777	-22 141	**-58 918**	99 985	20 848	0	-372	-6 226	**114 236**	55 318	5.4%
	Poland	2008	-14 435	-5 361	**-19 796**	53 177	78 804	0	7 824	-1 742	**138 062**	118 266	15.0%
	Portugal	2006	-11 848	-4 706	**-16 553**	73 993	27 167	0	4 858		**106 018**	89 464	18.1%
	Slovak Republic	2008	-15 033	-5 953	**-20 985**	38 685	35 766	0	5 943	-1 250	**79 145**	58 159	11.3%
	Slovenia	2007	-19 911	-5 848	**-25 759**	96 667	83 921	0	1 035	-200	**181 423**	155 664	16.3%
	Spain	2008	-37 506	-3 819	**-41 325**	49 879	12 434	0	4 603		**66 916**	25 591	5.3%
	Sweden	2008	-39 997	-16 313	**-56 310**	98 282	7 794	0	1 257	-8 341	**98 992**	42 683	5.1%
	Switzerland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Turkey	2005	-9 567	-3 814	**-13 381**	18 209	16 010	0	886		**35 106**	21 724	9.3%
	United Kingdom	2008	-15 151	-15 796	**-30 947**	78 788	35 928	0	5 025	-2 244	**117 497**	86 550	11.0%
	United States	2008	-42 430	-3 124	**-45 554**	212 253	51 525	0	14 556		**278 334**	232 779	14.5%
	OECD average		-26 250	-9 835	**-36 085**	102 851	33 225	172	4 546	-5 296	**137 201**	101 116	10.8%
	EU21 average		-28 455	-9 367	**-37 822**	102 849	39 509	284	5 377	-5 859	**143 538**	105 716	11.2%

Notes: Estonia estimate assumes duration of tertiary education is 5.5 years.

Values are based on the difference between people who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012).*

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

StatLink http://dx.doi.org/10.1787/888932665582

Table A9.4. [2/2] Public net present value and internal rate of return for an individual obtaining tertiary education as part of initial education (2008 or latest available year)

In equivalent USD converted using PPPs for GDP

		Year	Direct cost	Foregone taxes on earnings	Total costs	Income tax effect	Social contribution effect	Transfers effect	Unemployment effect	Grants effect	Total benefits	Net present value	Internal rate of return
							Per woman						
OECD	Australia	2005	-13 209	-6 853	**-20 062**	71 195	0	0	3 419	-6	**74 608**	54 546	13.1%
	Austria	2008	-39 081	-10 483	**-49 564**	87 056	55 999	0	3 328	-9 852	**136 531**	86 968	7.2%
	Belgium	2005	-20 552	-7 822	**-28 374**	94 858	52 075	0	13 646	-862	**159 718**	131 345	17.5%
	Canada	2008	-25 745	-3 937	**-29 682**	58 596	16 632	0	2 097	-1 103	**76 222**	46 539	8.5%
	Chile		m	m	**m**	m	m	m	m	m	**m**	m	m
	Czech Republic	2008	-18 619	71	**-18 547**	46 477	28 689	0	4 909		**80 074**	61 527	12.7%
	Denmark	2008	-66 835	-23 309	**-90 144**	54 341	11 718	7 081	1 757	-25 189	**49 707**	-40 437	1.0%
	Estonia	2008	-22 774	-3 465	**-26 239**	18 703	2 377	0	1 545		**22 626**	-3 612	2.2%
	Finland	2008	-40 184	-13 454	**-53 639**	67 724	12 745	1 661	5 065	-8 730	**78 465**	24 826	4.7%
	France	2008	-35 052	-10 181	**-45 233**	43 527	31 158	84	4 994	-3 620	**76 144**	30 911	5.6%
	Germany	2008	-38 267	-24 404	**-62 671**	76 514	55 196	926	8 974	-6 021	**135 590**	72 920	7.4%
	Greece		m	m	**m**	m	m	m	m	m	**m**	m	m
	Hungary	2008	-15 556	-3 537	**-19 094**	104 090	43 123	0	11 218	-1 283	**157 149**	138 055	20.9%
	Iceland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Ireland	2008	-35 397	-315	**-35 712**	90 864	28 943	0	1 964	-4 361	**117 411**	81 699	9.6%
	Israel	2008	-18 417	-1 329	**-19 745**	28 170	19 701	0	2 191		**50 063**	30 317	7.8%
	Italy	2008	-17 538	-11 185	**-28 723**	77 919	21 270	0	2 750	-3 330	**98 610**	69 886	8.0%
	Japan	2007	-17 897	-10 654	**-28 551**	20 218	27 924	0	1 822		**49 965**	21 414	6.2%
	Korea	2008	-6 770	-4 588	**-11 358**	8 331	15 613	0	2 976		**26 919**	15 561	8.0%
	Luxembourg		m	m	**m**	m	m	m	m	m	**m**	m	m
	Mexico		m	m	**m**	m	m	m	m	m	**m**	m	m
	Netherlands	2008	-37 382	-35 640	**-73 022**	128 001	28 440	0	3 582	-14 371	**145 652**	72 630	6.2%
	New Zealand	2008	-22 524	-7 347	**-29 871**	33 955	1 608	2 591	634	-1 891	**36 897**	7 026	4.2%
	Norway	2008	-36 777	-22 398	**-59 175**	59 828	16 674	0	1 098	-6 226	**71 374**	12 199	3.8%
	Poland	2008	-14 435	-5 047	**-19 482**	22 460	46 221	0	8 041	-1 742	**74 980**	55 498	10.9%
	Portugal	2006	-11 848	-3 689	**-15 537**	89 669	35 321	0	3 385		**128 374**	112 837	17.6%
	Slovak Republic	2008	-15 033	-5 644	**-20 676**	30 346	24 560	0	7 273	-1 250	**60 929**	40 253	9%
	Slovenia	2007	-19 911	-5 674	**-25 585**	70 951	69 680	0	8 594	-200	**149 024**	123 439	13.4%
	Spain	2008	-37 506	-3 659	**-41 165**	58 077	14 980	0	5 445		**78 503**	37 338	6.3%
	Sweden	2008	-39 997	-16 182	**-56 179**	36 903	9 372	0	2 986	-8 341	**40 920**	-15 259	1.8%
	Switzerland		m	m	**m**	m	m	m	m	m	**m**	m	m
	Turkey	2005	-9 567	-3 320	**-12 887**	19 194	17 528	0	4 171		**40 894**	28 006	9.1%
	United Kingdom	2008	-15 151	-6 193	**-21 344**	70 462	38 754	2 242	3 494	-2 244	**112 709**	91 365	14.8%
	United States	2008	-42 430	-3 188	**-45 618**	94 347	29 697	0	5 887		**129 931**	84 313	9.7%
	OECD average		-26 230	-9 051	**-35 281**	59 385	27 000	521	4 545	-5 296	**87 857**	52 575	8.8%
	EU21 average		-28 423	-8 609	**-37 031**	61 534	31 183	706	5 043	-5 859	**93 985**	56 954	9.0%

Notes: Estonia estimate assumes duration of tertiary education is 5.5 years.

Values are based on the difference between people who attained a tertiary education compared with those who have attained an upper secondary or post-secondary non-tertiary education.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2012)*.

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StatLink http://dx.doi.org/10.1787/888932665582