

Executive Summary

# The Financial Impact of Cross-border Student Mobility on the Economy of the Host Country

**Commissioned by**  
German Academic  
Exchange Service  
(Deutscher Akademischer  
Austauschdienst e.V.,  
DAAD)

**Contact persons**  
Dr. Iris Pfeiffer  
Dr. Michael Böhmer

**Authors**  
Claudia Münch  
Markus Hoch

Berlin, 18 November 2013

SPONSORED BY THE



**Business Profile****Executive Director**

Christian Böllhoff

**President of the Administrative Board**

Gunter Blickle

**Commercial Register Number**

Berlin HRB 87447 B

**Legal Form**

AG (*Aktiengesellschaft*) according to Swiss Law

**Founded**

1959 in Basel, Switzerland

**Tätigkeit**

European-wide, Prognos develops practical strategies for enterprises, organisations and the public sector on the basis of authoritative and objective analyses.

**Working Languages**

German, English, French

**Headquarters**

Prognos AG

Henric Petri-Str. 9

CH-4010 Basel

Phone +41 61 3273-310

Fax +41 61 3273-300

info@prognos.com

**Other Locations**

Prognos AG

Goethestr. 85

D-10623 Berlin

Phone +49 30 52 00 59-210

Fax +49 30 52 00 59-201

Prognos AG

Science 14 Atrium; Rue de la Science 14b

B-1040 Brussels

Phone +32 2808-7209

Fax +32 2808-8464

Prognos AG

Nymphenburger Str. 14

D-80335 Munich

Phone +49 89 954 1586-710

Fax +49 89 954 1586-719

Prognos AG

Domshof 21

D-28195 Bremen

Phone +49 421 51 70 46-510

Fax +49 421 51 70 46-528

Prognos AG

Schwanenmarkt 21

D-40213 Düsseldorf

Phone +49 211 91316-110

Fax +49 211 91316-141

Prognos AG

Friedrichstr. 15

D-70174 Stuttgart

Phone +49 711 3209-610

Fax +49 711 3209-609

**Internet**

www.prognos.com

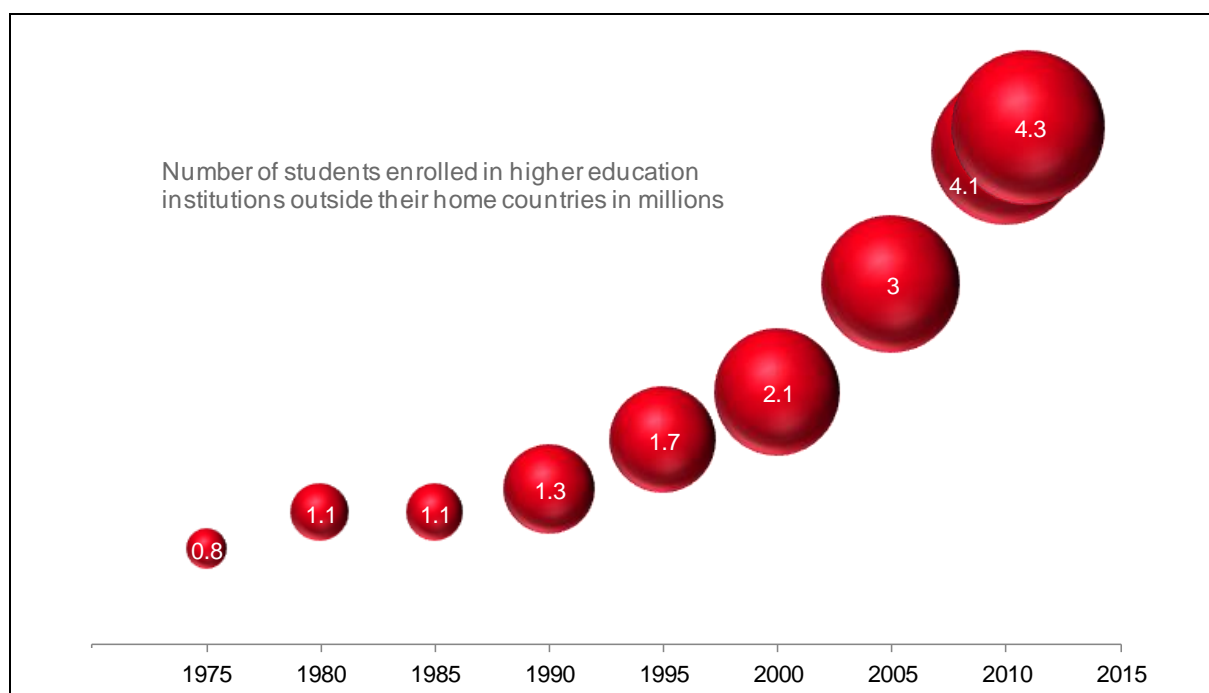
# The Financial Impact of Cross-border Student Mobility on the Economy of the Host Country – Executive Summary

Prognos AG was commissioned by the German Academic Exchange Service (DAAD) to carry out a study of the financial and economic effects of cross-border student mobility in different European countries.

## Background to the study

One of the central aims of the Bologna Process launched in 1999 is to facilitate exchange studies at higher education institutions across Europe. Students have thereby been provided with improved access to higher education institutions and degree programmes according to their individual preferences and skill sets. Worldwide data on international student mobility confirm a sustained upward trend. In host countries, the student body is becoming more international. The following graph illustrates how the number of international students attending higher education institutions in OECD countries has developed over time.

*Figure 1: Long-term growth in numbers of students enrolled in higher education institutions outside their home countries*



Source: OECD 2013, own illustration Prognos AG 2013

The surge of international student mobility induces effects not only at the individual level of the students concerned but also on the societal, financial, and economic development of the involved host countries. On the one hand, host countries have to provide places of study, accommodation and advisory services for the international students at their higher education institutions. On the other hand, they stand to benefit from their presence, e.g. as result of their expenditure.

## Study design

The study employs a model for calculating the short- and long-term financial and economic effects of international student mobility developed on the basis of an analysis of the available national and international literature.

The present study addresses the following main questions:

- What are the costs and returns resulting for host countries from cross-border student mobility?
- At which institutional level are the costs and returns realised?
- Over what time scales are the costs and returns from student mobility realised?

Beside Germany, the countries embraced by the study are the Netherlands, Austria, Poland, Switzerland and Spain. The analysis solely takes into account mobile foreign students<sup>1</sup> who are residing in a host country within the context of learning mobility for degree purpose at Bachelor's or Master's level (so-called degree mobility).

In order to obtain a valid data resource, the countries embraced by the study were asked to complete a short questionnaire on the number of international students they were hosting and the respective framework of studies. The country data are then compared and supplemented with the official international statistics.

---

<sup>1</sup> i.e. students of foreign nationality who obtained their higher education entrance qualifications within the school system of another country. The analysis does not include non-mobile foreign students, i.e. students of foreign nationality who obtained their higher education entrance qualifications within the German school system.

## Evaluation and preliminary considerations

It was not until quite recently that the academic literature began to address the question whether international student mobility is either financially advantageous or purely a cost factor for host countries.

An analysis of the literature reveals three (quantifiable) chain effects triggered by international student mobility:

**Costs of financing places of study:** The provision of places of study incurs costs for host countries. Depending on the type of higher education system, these costs are financed to a greater or lesser extent by tuition fees. Some higher education institutions in the Netherlands, for instance, in addition to the statutory tuition fees charge non-EU/EWR citizens an institutional fee to cover costs in full. The Anglo-American countries charge international students tuition fees that are frequently in excess of those charged to domestic students.

**Expenditure on the part of international students:** The money international students spend on their accommodation, living expenses, leisure and travel activities translate into positive effects for the economies of host countries – such expenditure gives rise to gross value added and job creation. At the macro level, revenues are generated from indirect taxes on student expenditure as well as from the additional income tax levied on the subsequently created jobs.

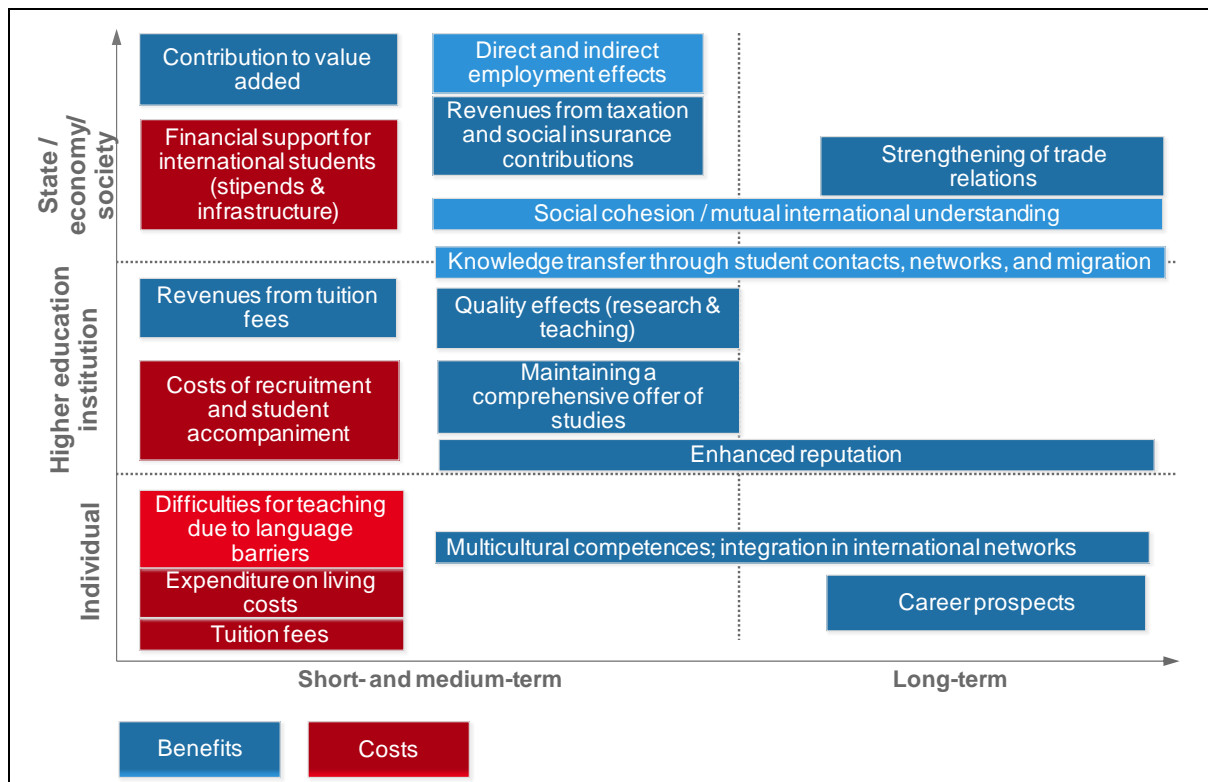
**The income of international students:** In the event that international students remain in a host country following their studies and enter into gainful employment, that country will benefit from direct taxation of their income and social insurance contributions. As described above, in the short term the expenditure of international graduates results in value creation and employment. The extent of such benefits depends on how many international students decide to stay in the host country.

On the whole, the literature accords that positive aggregate effects accrue to host countries from international student mobility. However, the degree of differentiation among such studies varies considerably. In the Anglo-American countries, for example, the cost and benefit calculations take solely the actual time spent studying into account. A recent study by the Netherlands Bureau of Economic Policy Analysis investigates the short- and long-term effects of international student mobility on public finances in the Netherlands. The study comes to the conclusion that through the presence of international students additional costs arise at the level of the state; however, that these costs are later offset by tax revenues when international graduates stay in the country.

Solely taking such quantifiable effects into consideration would, though, be inappropriate for assessing the overall economic effects of international student mobility. Facilitating international students to access higher education institutions and the subsequently enhanced internationalization of the student body also strengthens the competitiveness of a host country in a number of ways.

The following graph gives an overview of the effects of international student mobility.

Figure 2: An overview of the cost and benefit effects of cross-border student mobility – based on an analysis of the literature



Source: own research Prognos AG 2013

Opening up the higher education area enhances the quality of competition among higher education institutions. Increasing the choice of studies open to students leads higher education institutions adapting their offers of education in line with students' preferences. At the same time, the foreign language competences of teachers and students are given a boost so that language barriers do not impair the quality of teaching.

The internationalization of the student body promotes knowledge spillover during the course of studies and during the career lives of students who stay in a host country. Furthermore, the networking possibilities built up during studies may have positive effects on

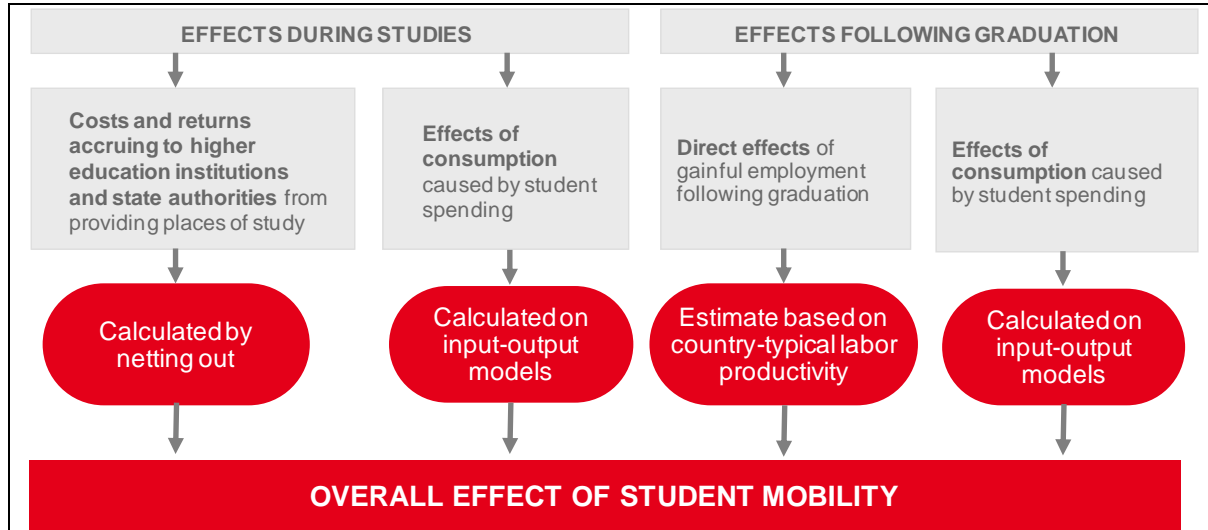
future economic relations between participating countries, e.g. through facilitating trade relations.

In particular, international student mobility is increasingly being discussed within the context of attracting highly qualified professionals. Offering international students places of study enables host countries the possibility to recruit graduates for the local labour market on a permanent or at least a temporary basis. In view of demographic developments and the discussion surrounding the future supply of graduates, this topic is bound to gain more attention.

### Development of the model quantifying the costs and benefits

Based on an analysis of the literature, a model was developed to quantify the effects of international student mobility. In our model, the three cause and effect chains we identified above are spread over two time domains: effects during the actual period of studies and effects following graduation. The following graph gives an overview of how the calculation was carried out.

Figure 3: Overview of calculation steps



Source: own research Prognos AG 2013

### **Effects during actual period of studies:**

On the **income side**, the economies of host countries benefit in the short term from the effects (value creation and employment) triggered by student spending. These effects are calculated on the basis of an input-output model. The input-output calculation flows into the national accounts. It reflects the relationships of goods and production within the economy as well as between other economies, and is therefore useful for calculating the effects induced by consumer demand.

The effects of tax revenues at the level of state authorities are calculated on the basis of internationally comparable tax tables.

### **Effects following graduation:**

The direct effects caused when students remain in a host country after graduation are twofold. On the one hand, there are the direct effects of value creation resulting from gainful employment on the part of the students concerned: this is calculated on the basis of country-typical productivity. On the other hand, there are the revenues accruing to the state authorities through taxation on the income of the graduates: likewise, this is assessed on the basis of internationally comparable tax tables.

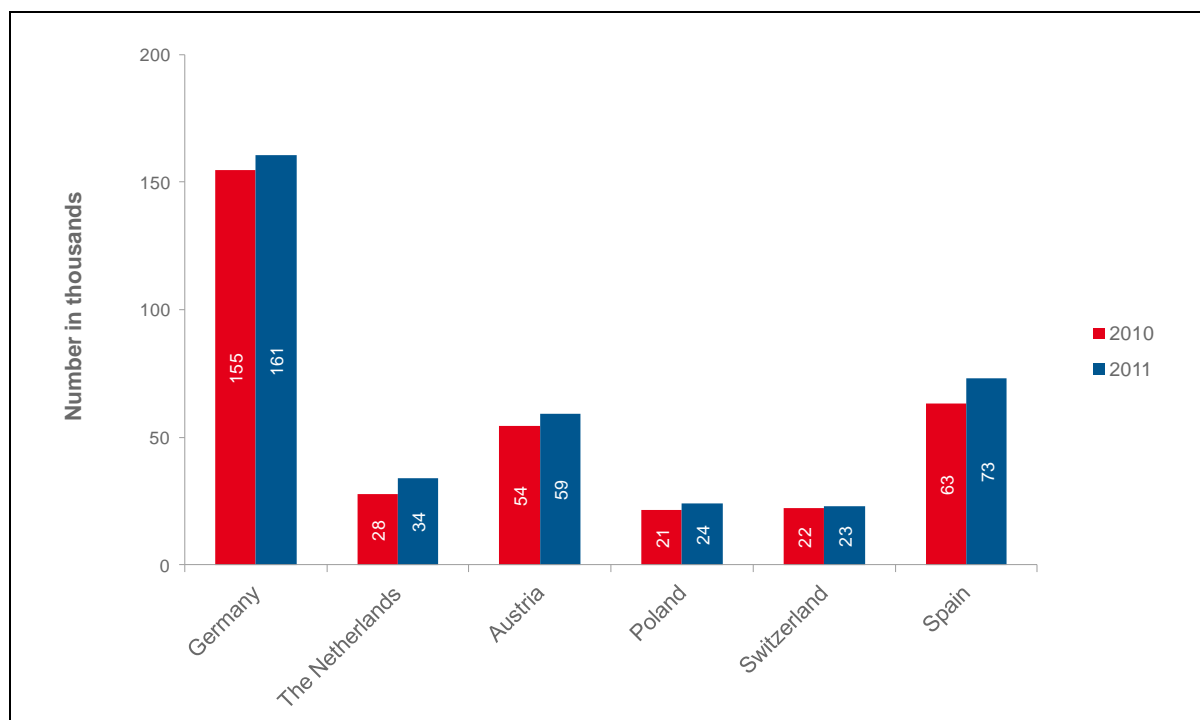
As in the case of international students, the effects triggered by the consumer spending of international graduates are modeled on input-output calculations.



## Results of the model calculations

The absolute level of the individual effects is calculated on the basis of the number of international students present in a host country. The following describes both the individual per-person effects as well as the aggregate effects.

Figure 4: Number of international students in thousands (first and second cycle programmes), 2010 and 2011



Source: Statistical offices of the countries concerned, own illustration Prognos AG 2013

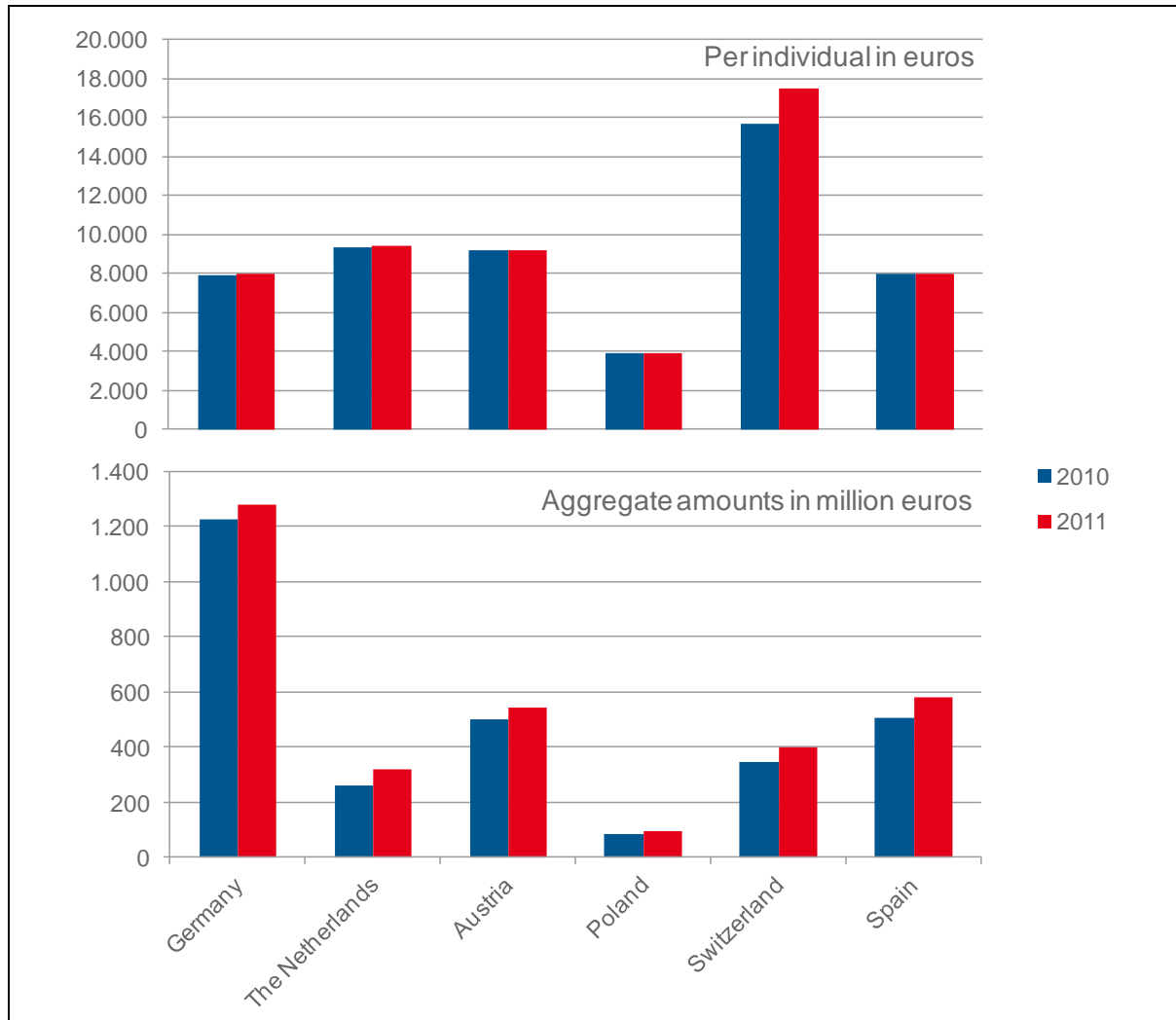
### Effects during actual period of studies:

The macro-economic effects on value creation and employment depend on the amounts international students have to spend to cover their living expenses. In Switzerland, due to the high living costs there, students spend around 19,500 euros p.a. The cost of living is lowest in Poland, where student expenditure amounts to 4,800 euros. In the other researched countries, the money students spend on accommodation and consumption ranges from 9,000 euros in Spain, to 11,400 euros in the Netherlands.

The value added calculated for international students in Germany amounts to around 8,000 euros per head. The effect per individual is similar in the Netherlands, Austria, and Spain. In Switzerland the gross value added per student amounts to 17,500 euros, and in Poland it is 3,900 euros. The aggregate value added contribution of international students in a host country is calculated by multiplying the above amounts by the number of international

students. The aggregate amount is highest in Germany, at 1.28 billion euros.

Figure 5: Gross value added of individual student consumer expenditure, 2010 and 2011



Source: own research Prognos AG 2013

Connected with the gross value added effects are the employment effects. This is because beside additional capital, production of the additionally demanded goods and services also entails job creation. In 2011, in Germany this accounted for a total of almost 22,000 jobs. An examination of the relation between international students and jobs reveals that each international student in Germany leads to the creation of approx. 0.14 jobs. In Poland the relation is as much as 0.23 (5,700 in aggregate). For the Netherlands and Austria the relation is 0.15 (totalling 5,000 and 8,800 jobs respectively), in Spain 0,16 (in aggregate 11,500), and in Switzerland the relation is 0.18 (or 4,100 jobs).

In 2011, in Germany the taxation effects of student expenditure amounted to around 2,500 euros per individual. Projected over the aggregate number of students, this amounted to some 400 million euros.

On the costs side there is the expenditure caused by the provision of places of study. As the higher education institutions in all the researched countries are mainly state funded, these costs accrue mainly at the level of the state. State expenditure per place of study varies between 2,900 euros in Poland and 22,500 euros in Switzerland. At around 11,900 euros, Germany is mid-field. Austria and the Netherlands, at 11,200 euros and 10,500 euros respectively, have similarly high state expenditure. In Spain the state expenditure on higher education funding is lower, at around 8,000 euros.

### **Effects following graduation when international students remain in a host country:**

In the first instance, the economies of host countries stand to benefit from the value creation directly resulting from gainful employment. For Germany, the model calculations yield a direct annual value creation effect of 53,300 euros per international graduate. Additional value added in an amount of 17,100 euros results from consumer expenditure on the part of international graduates. As the expenditure of an employed person is higher than that of a student, the value added amount is higher than that created during the actual period of studies. A country comparison shows the aggregate gross value added effect per head is highest in Switzerland (124,400 euros), and lowest in Poland (22,100 euros). In the Netherlands and Austria the aggregate value added contributed by each graduate amounts to around 74,000 euros, and in Spain it is 57,400 euros.

Expenditure on the part of employed graduates – as in the short-term case of students – leads to job creation. The employment effects range between 0.26 jobs per international student in Austria, and 0.34 jobs in Switzerland. Germany is again mid-field with a relation of 0.3.

Due to the different taxation systems in the countries researched, the level of effects resulting from the taxation of earnings of international graduates varies considerably. In countries like Germany and Austria with relatively high average levels of income tax, the annual effect per head at around 22,700 euros and 25,000 euros respectively is correspondingly higher than in the other countries researched (ranging between 3,800 euros in Poland and 22,700 euros in Germany; these calculations are based on the average tax rate paid by single childless persons).

Analogue to the short-term case of international students, it can also be expected that long-term tax revenues from indirect taxes on consumer goods and services as well as direct taxes on the earnings arising from job creation will be realised. This is assessed at between 1,200 euros p.a. in Poland, and 5,500 euros in Germany.

### Overall assessment of effects:

The above comparison of the effects illustrates that positive macro-economic effects arise for countries hosting international students. These are caused by the creation of gross value added, job creation, and revenues accruing to the state. The following table shows the effect per individual student during the period of actual studies as well as for the case of international graduates who stay in the host country.

*Table 1: Annual effects per head during the period of studies and in the case of remaining in the host country*

|                 | Gross value added effects (in €) |                         | Employment effects (in jobs) |                         | Effects on the state (in €) |                         |
|-----------------|----------------------------------|-------------------------|------------------------------|-------------------------|-----------------------------|-------------------------|
|                 | During studies                   | International graduates | During studies               | International graduates | During studies              | International graduates |
| Germany         | 7,960                            | 70,362                  | 0.14                         | 0.30                    | 2,494                       | 28,227                  |
| The Netherlands | 9,384                            | 74,074                  | 0.15                         | 0.29                    | 2,522                       | 19,389                  |
| Austria         | 9,196                            | 73,913                  | 0.15                         | 0.26                    | 2,893                       | 25,097                  |
| Poland          | 3,925                            | 22,087                  | 0.23                         | 0.30                    | 954                         | 5,029                   |
| Switzerland     | 17,518                           | 124,447                 | 0.18                         | 0.34                    | 2,498                       | 16,645                  |
| Spain           | 7,968                            | 57,445                  | 0.16                         | 0.27                    | 1,864                       | 13,193                  |

Source: own research Prognos AG 2013

Precisely who bears the costs and who benefits during the period of actual studies varies from country to country. For instance, in all of the researched countries the costs of providing places of study for international students are borne mainly by the state authorities. A comparison of the revenues accruing to the state over the same period of time shows that these revenues are insufficient to offset the costs incurred.

As the expected yields from investment in education are only realised over the longer term, it would be inappropriate to attempt any definitive assessment of the effects on such a short-term basis. However, over the longer term there is a clear increase in the macro-economic returns. The annual level of long-term returns

depends entirely on the number of international students who, once they have graduated, choose to remain in a host country and pursue gainful employment.

Hence, the proportion of international students who choose to remain in a host country (the retention rate) also determines the period necessary to amortize the investment a host country makes when providing places of study. In the event that 30 % of the international students remain in the country after completing their studies, the investment Germany makes on providing places of study could already be amortised after a period of five years. In Switzerland, on the other hand, the costs would only be covered after a period of around 17 years: this is because of the combination of high costs for providing places of study in Switzerland and the low tax rates in that country.

*Table 2: Netting out the aggregate costs and returns of state funding in the event that 20 % or 30 % of international students remain in a host country, in million euros and years*

|                 | Aggregate costs accruing to states for providing places of study for international students (based on four years) | Total returns for the state                                     |  |  |  |  |
|-----------------|---|---|--|--|--|--|
|                 |   | During the actual period of studies (student consumer spending) | After completion of studies, p.a. (retention rate 20%) | Period of employment needed to cover costs (in years) (retention rate 20%) | After completion of studies, p.a. (retention rate 30%) | Period of employment needed to cover costs (in years) (retention rate 30%) |
| Germany         | - 8.353   | 1.603   | 907  | 7,4  | 1.361  | 5,0  |
| The Netherlands | - 1.622   | 343   | 132  | 9,7  | 198  | 6,5  |
| Austria         | - 2.683   | 683   | 296  | 6,7  | 445  | 4,5  |
| Poland          | - 282   | 93  | 24   | 7,8  | 37   | 5,2  |
| Switzerland     | - 2.126   | 229   | 76   | 24,9   | 114  | 16,6   |
| Spain           | - 2.495   | 545   | 193  | 10,1   | 289  | 6,7  |

Source: own research Prognos AG 2013

## Conclusion

The model calculations show that the economies of host countries benefit significantly from value creation resulting from student mobility. It is typical for investment in education that there is a time discrepancy between the costs and benefits, and that these are spread over different actors. The period needed before the returns accruing to the state offset the costs of providing places of study depends on the proportion of international students who choose to

remain in a host country and are gainfully employed. However, the country's economy already stands to benefit in the short term in the form of value creation and employment effects from student consumer spending.

In addition to this, student mobility gives rise to chain effects that cannot be expressed in mere economic terms. The extent of such effects is a function of the quantity and quality of student mobility. On the one hand, this refers to the possibility of cross-border knowledge transfer which benefits the participating countries. On the other hand, student mobility represents a significant means of recruiting qualified international professionals for the local labour market. Furthermore, the student body is able to acquire multicultural competences which on the level of the individual are valuable for future careers, and on the societal level contribute towards understanding and breaking down prejudices between peoples. Moreover, cross-border student mobility facilitates the formation of international networks, which can in the long term lead to intensified economic relations among participating countries.