

Hans Pohl

STINT's Internationalisation Index – Methodology

This document describes why and how the internationalisation index was designed.

Purpose

STINT's internationalisation index tries to capture how international a certain higher education institution (HEI) is. Internationalisation of research and higher education has many dimensions and the priorities change over time. One illustration of the many faces of internationalisation is given in Knight (2007)¹. Given this diversity and the lack of clear definitions, any attempt to measure internationalisation is to be considered a basis for discussion rather than the final answer.

It is also very important to note that this index does not measure the quality of higher education institutions.

Data

Ideally, the index should be based on globally available data to allow for comparisons. More realistically, it has at least at an initial stage to be restricted to the larger HEIs in Sweden. Even then, there are difficulties to obtain data and the development of the index has led to several new approaches to data acquisition and analysis.

STINT acknowledges that this type of measurement activities is a compromise between availability of data and what dimensions we try to capture. We will continue to strive for a development of better national and international data. Such data is definitely not only of interest for STINT but also for the Swedish HEIs, if they aspire to manage their internationalisation efforts in a proper way.

Dimensions

The index consists of six dimensions; research, students, PhD students, education, faculty and leadership, which are described below.

Research (R)

The research part of the index uses an improved version of the traditional share of international co-publications, the field-weighted internationalisation score (FWIS), which is available for almost all HEIs in the world in Elsevier's system SciVal. FWIS represents how international a HEI is in terms of international co-publications adjusted for scientific profile, type of publications and year. $FWIS = 1$ is the world average.²

$R = FWIS$

¹ Knight, J (2007) Internationalization: Concepts, Complexities and Challenges. In JJF Forest & PG Altbach (eds) International Handbook of Higher Education Part One: Global Themes and Contemporary Challenges (pp. 207-227). Springer, Amsterdam, Netherlands.

² Pohl H, Warnan G, and Baas J (2014) Level the playing field in scientific international collaboration with the use of a new indicator: Field-Weighted Internationalization Score, *Research Trends* 39, 3-8.



Data from SciVal® database, Elsevier B.V., <http://www.scival.com>.

Students (S)

The mobile student share is calculated as

$$S = (\text{Incoming} + \text{Outgoing}) / \text{Total} \text{ [numbers of students]}$$

Data from UKÄ. The following sources are used (example given for 2013):

- UKÄ Nyckeltal: Utbildning på grund- och avancerad nivå HT2013/HT2012...
- Universitet och högskolor Internationell studentmobilitet i högskolan 2013/14 Tabell 7B Inresande studenter i högskoleutbildning... (totalt läsåret 13/14)
- Universitet och högskolor Internationell studentmobilitet i högskolan 2013/14 Tabell 17 Utresande utbytesstudenter i högskoleutbildning... (totalt läsåret 13/14)

It should be noted that the figure for incoming students encompasses a broader group than the outgoing student figure, which only covers exchange students, as there is no data for outgoing freemovers (for obvious reasons, they have seldom an affiliation to a Swedish university).

PhD students (P)

For each HEI the share of foreign PhD students is calculated as

$$P = \text{Foreign} / \text{Total} \text{ [numbers of PhD students]}$$

Data from UKÄ. The following sources are used:

- Utländska doktorander per forskningsämnesområde (1-siffernivå). Utländsk doktorand: en person som hos Migrationsverket angivit studier på forskarnivå som grund för bosättning och som invandrat mindre än två år innan doktorandstudierna påbörjades. Fall semester data is used.
- Aktiva doktorander per ämnesområde/grupp fr.o.m. VT11. Fall semester data is used.

PhD students are not included in faculty below.

Education (E)

Indicator for courses and programmes in other tuition languages than Swedish (typically English). The share is calculated as

$$E = \text{Non-Swedish} / \text{Total} \text{ [credits offered]}$$

Data from www.universityadmissions.se (UHR). The database only distinguishes between Swedish and English.

Faculty (F)

PhD abroad is defined as staff at a Swedish HEI with completed PhD studies at a foreign HEI. The share is calculated as

$$\text{PhD abroad} = \text{Staff with PhD abroad} / \text{All staff with PhD}$$

Data was purchased from SCB (May 2016). It comes from Utbildningsregistret (UREG) and Registret över personal vid universitet och högskolor.



Research abroad is defined as active researchers that have at least one publication with a foreign affiliation. Active researcher is defined as having at least one Scopus publication in the last 5-year window and having on average at least one publication every 3 years since first publication year. Current affiliation is defined as having the majority of all publications in the last 3-year window at the institution.

The share of staff with research abroad is calculated as

Research abroad = Active researchers with publications abroad/ All active researchers

Scopus data was purchased from Elsevier (May 2016).

The total score for faculty is calculated as

$$F = (\text{PhD abroad} * \text{scaling factor} + \text{Research abroad} * \text{scaling factor})/2$$

Leadership (L)

The leadership at a HEI is defined as the vice-chancellor and the provice-chancellor.³

Definitions are as for faculty above. The score is calculated as

$$L = (\text{PhD abroad} * \text{scaling factor} + \text{Research abroad} * \text{scaling factor})/2$$

Data was collected through a questionnaire directly to the leadership in April/May 2016. For the five persons which did not respond, manual search on Internet and Scopus was carried out.

Star rating scheme

In order to have a direct representation of the indicators, the scores for the dimensions are only recalculated to fit into a 0 – 100 percent window, see Table 1. A limit was introduced for some of the dimensions as it can be questioned if higher values than the limits are beneficial. The limit also reduces the impact from outliers.

Table 1: Component scaling

Dimension	Actual values	Limit (max)	Scaling to 100%	Weight
Field-weighted share of international co-publications (R)	0,7 – 1,8		$(x-0,6)/(2-0,6)$	40%
Share mobile students (S)	4% - 36%	100%	*2	20%
Share foreign PhD students (P)	0% - 66%	50%	*2	8%
Share education in foreign language (E)	6% - 70%	50%	*2	12%
International recruitment of staff (F)			$0,5*(A + B)$	15%
A) Share with PhD abroad	3% - 18%		*4	
B) Share with research abroad	19% - 32%		*2	
International recruitment of HEI leadership (L)			$0,5*(C + D)$	5%
C) Share with PhD abroad	0% - 50%		*1	
D) Share with research abroad	0% - 100%		*1	

³ In the governmental bill 2009/10:149 En akademi i tiden – ökad frihet för universitet och högskolor, a removal of the Swedish citizenship requirement for board members and vice-chancellors was introduced



The weights for the dimensions are needed for a composite score. They reflect how STINT estimates the importance of the dimensions in relation to the overall use of internationalisation to contribute to the fulfilment of the HEI's missions. As the methods and data are publicly available, it is possible for other actors to make calculations based on their own priorities.

To visualise the results, a star rating is used, see Table 2. For example, a share of more than 16% mobile students (S) would give four stars.

Table 2: Star rating limits

Stars	R	S	P	E	F	L	Tot
*****	1,58	0,21	0,45	0,30	0,60	0,70	0,60
****	1,37	0,16	0,35	0,23	0,50	0,55	0,49
***	1,16	0,11	0,25	0,16	0,40	0,40	0,38
**	0,95	0,06	0,15	0,09	0,30	0,25	0,27
*	0,00	0,00	0,00	0,00	0,00	0,00	0,00
-	no data	no data	no data	no data	no data	no data	no data
Lower limit (actual data R, S, P & E and scores F, L & Tot)							