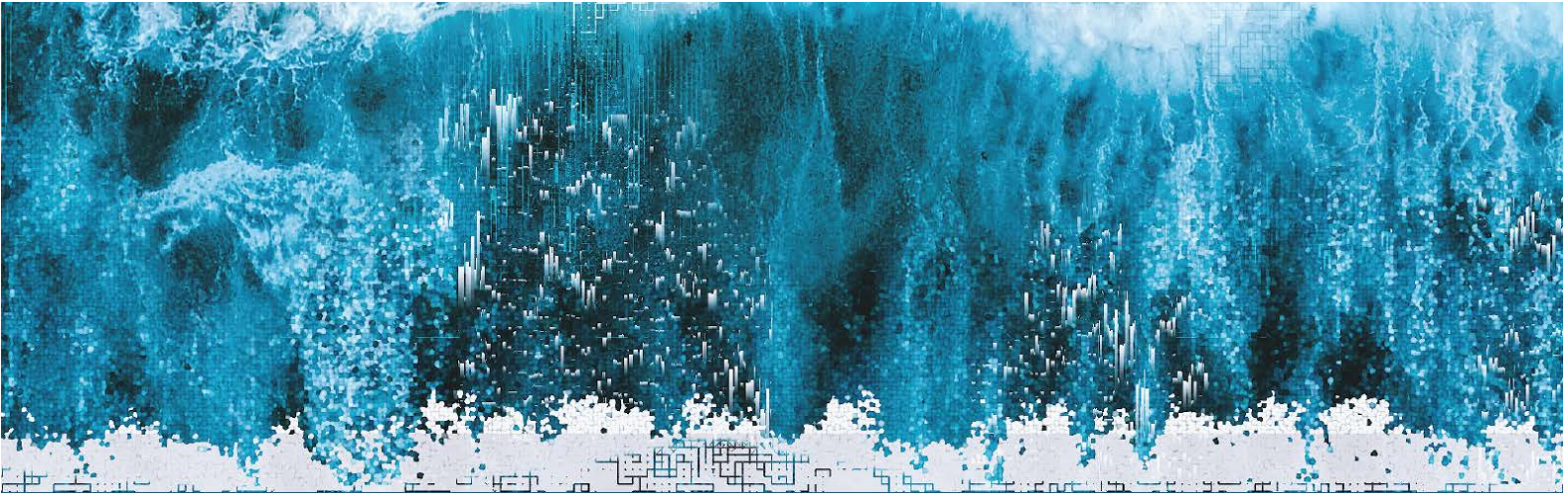


GLOBAL INNOVATION INDEX 2018

Hungary

33rd Hungary is ranked 33rd in the GII 2018, moving up 6 positions from the previous year.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Hungary's ranking over time[1].

Hungary's ranking over time

	GII	Input	Output	Efficiency
2018	33	41	25	8
2017	39	41	37	30
2016	33	38	30	17

- Hungary demonstrates a stable performance in innovation inputs, ranking 41st for the second consecutive year. It ranked slightly higher – 38th – in 2016.
- Hungary improves considerably in innovation outputs this year, entering the top 25 with the 25th position.
- Hungary proves to be highly efficient in translating its innovation inputs into more outputs. This is shown in its high position in the Innovation Efficiency Ratio, where it ranks 8th (up 22 spots from last year). This ratio is influenced by a much higher ranking in innovation outputs (25th) than in inputs (41st).

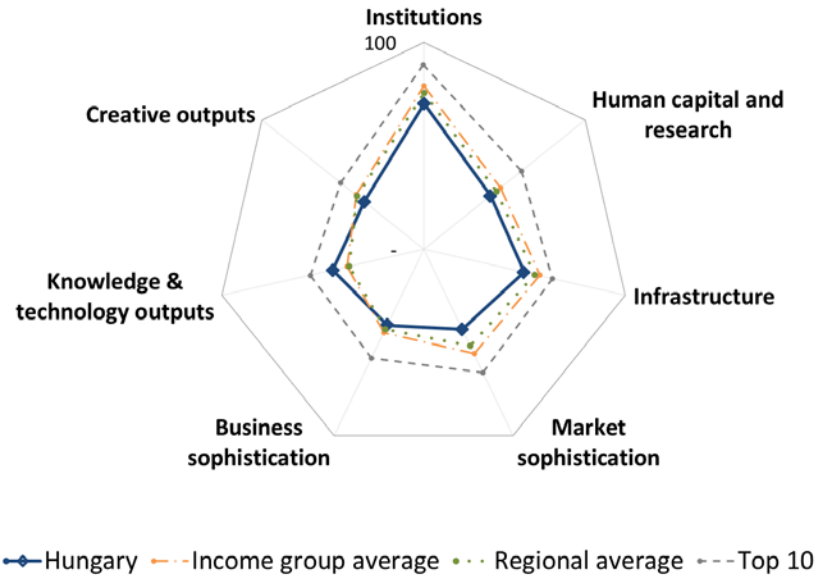
32nd Hungary is ranked 32nd among the 47 high-income countries in the GII 2018.

22nd Hungary is ranked 22nd among the 39 countries in Europe in the GII 2018.

[1] Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

Benchmarking Hungary to other high-income countries and the Europe region

Hungary's scores by area



High-income countries

Hungary has high scores in one of the seven GII areas – **Knowledge & Technology Outputs**, in which it scores above the average of the high-income group.

Top scores in the area *Knowledge diffusion* are behind this high ranking.

Europe region

Compared to other countries in the Europe region, Hungary performs above average in the same GII area – Knowledge & Technology Outputs.

Hungary's innovation profile

Strengths

- The most important strength for Hungary is in the **Innovation Efficiency Ratio**, where it ranks 8th in the world.

- The other relative strengths are concentrated in a few areas. On the **innovation input** side, strengths are mainly found in **Business Sophistication** (32nd), and in particular in one of its components – *Knowledge absorption* (4th), which itself is marked as a strength. Here, three of its five indicators present a strong performance: *High-tech imports* (15th), *FDI inflows* (5th), and *Research talent in business enterprise* (12th).

- On the **innovation output** side, Hungary achieves remarkable results in **Knowledge & Technology Outputs**, which itself is as a strength and where the country ranks 16th. Here strengths are: the area *Knowledge diffusion* (5th) and three of its four indicators – *Intellectual property receipts* (12th), *High-tech exports* (9th), and *FDI outflows* (1st). In Knowledge & Technology Outputs, other two indicators are marked as strengths for Hungary: *ISO 9001 quality certificates* (14th) and *High- & medium-high-tech manufactures* (6th).

- Finally, the indicator *ISO 14001 environmental certificates* (10th) is highlighted as particular strength in **Infrastructure** (49th).

- In **Creative Outputs** (44th), the indicator *Creative goods exports* (8th) is marked as a strength.

Weaknesses

- Hungary's relative weaknesses are mostly accrued among **innovation inputs**, and in particular in the area **Market Sophistication** (86th), where weak ranks are found in the area *Investment* (93rd) as well as indicators *Microfinance gross loans* (78th), *Ease of protecting minority investors* (92nd), *Market capitalization* (73rd), *and Intensity of local competition* (117th).

- On the innovation input side, other weaknesses are found in **Infrastructure** (49th), where the indicators *E-participation* (89th) and *Gross capital formation* (93rd) present relatively weak performance.

- In **Business Sophistication** (32nd), weaknesses are found in indicators *Firms offering formal training* (84th) and *Joint venture–strategic alliance deals* (82nd).

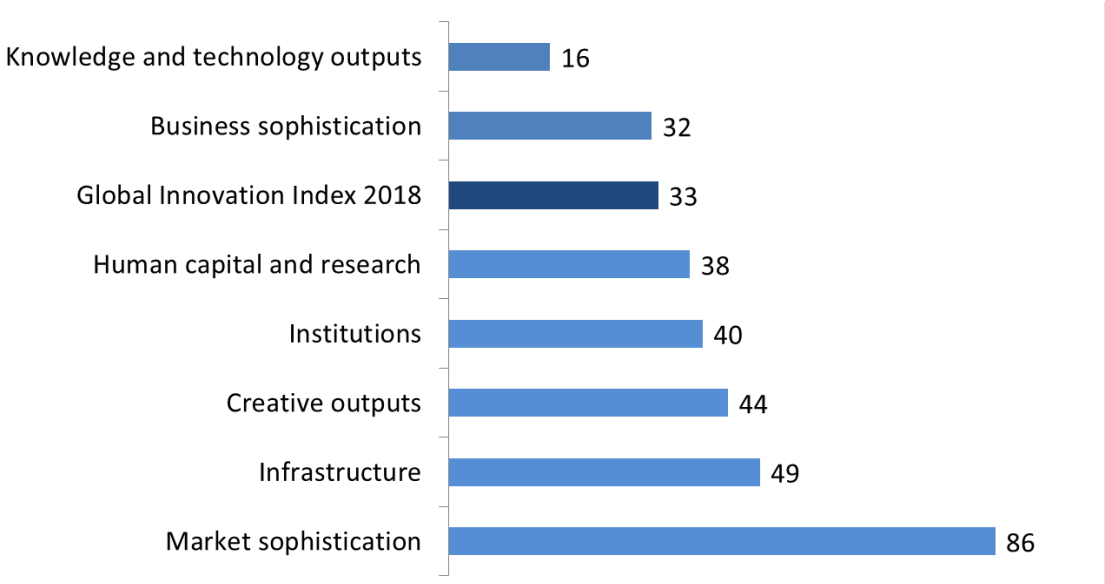
- On the **innovation output** side, relative weaknesses are only found in two indicators: *Productivity growth* (87th) in **Knowledge & Technology Outputs** (16th) and *Printing & other media* (69th) in **Creative Outputs** (44th).

The following figure presents a summary of Hungary's ranks in the 7 GII areas, as well as the overall rank in the GII 2018.

Hungary's rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

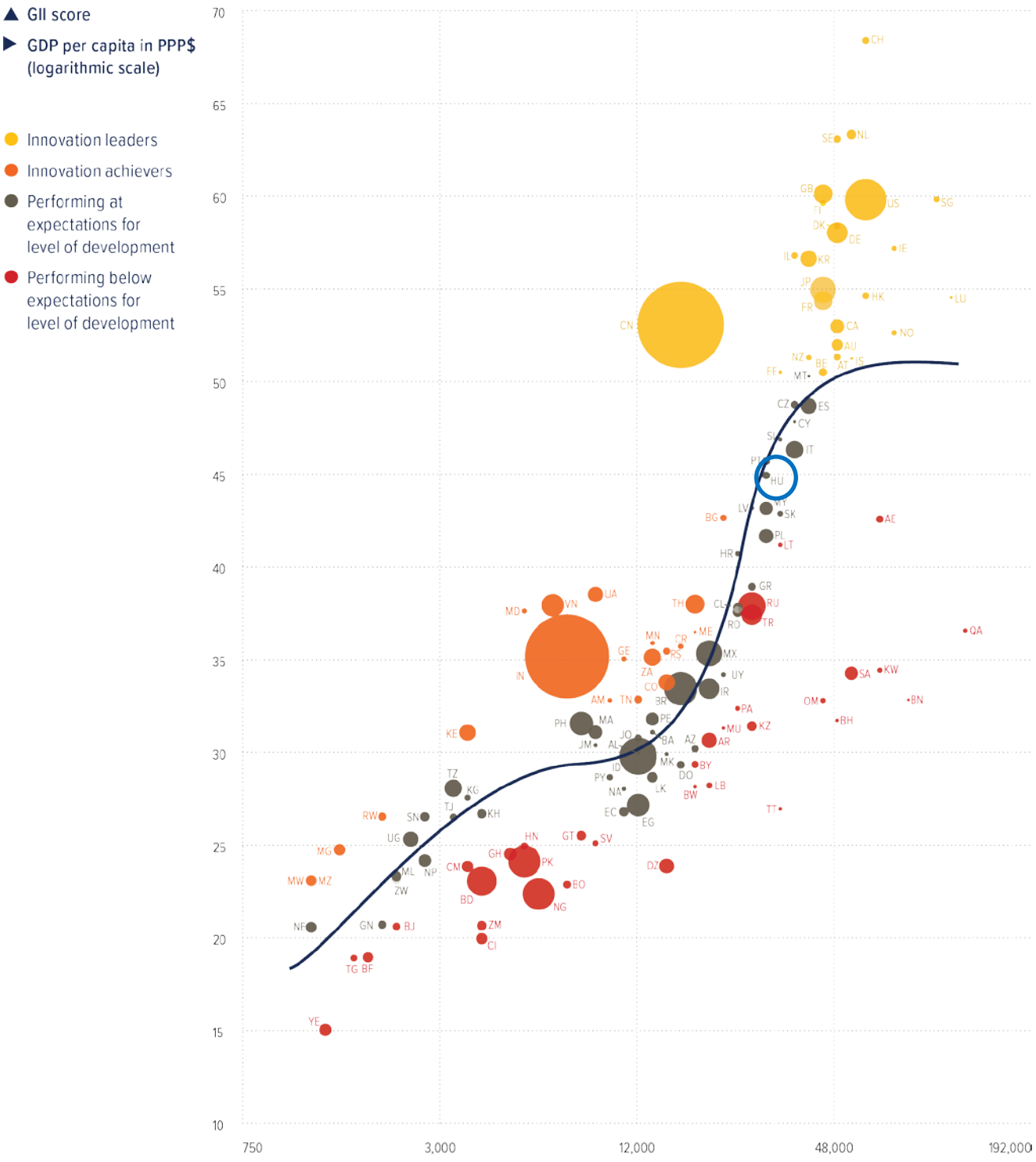
Total number of countries: 126



Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better that what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Hungary performs at its expected level of development.



Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Hungary that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	2017	Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum

Outdated Data

Code	Indicator	Country Year	Model Year	Source
4.1.3	Microfinance gross loans, % GDP	2007	2016	Microfinance Information Exchange, Mix Market
7.2.1	Cultural & creative services exports, % total trade	2015	2016	WTO, Trade in Commercial Services

HUNGARY

GII 2018 rank **33**

Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2017 rank
25	41	High	EUR	8 ●	9.7	283.6	29,473.7	39

		Score/Value	Rank	
	Institutions	**70.4**	**40**	
1.1	Political environment	64.7	44	
1.1.1	Political stability & safety*	81.2	32	
1.1.2	Government effectiveness*	56.4	46	◇
1.2	Regulatory environment	75.3	36	
1.2.1	Regulatory quality*	59.6	45	◇
1.2.2	Rule of law*	57.9	43	◇
1.2.3	Cost of redundancy dismissal, salary weeks	13.4	50	
1.3	Business environment	71.2	56	
1.3.1	Ease of starting a business*	87.6	65	
1.3.2	Ease of resolving insolvency*	54.8	58	
	Human capital & research	**41.2**	**38**	
2.1	Education	50.9	51	
2.1.1	Expenditure on education, % GDP	4.6	64	
2.1.2	Government funding/pupil, secondary, % GDP/cap	22.8	39	
2.1.3	School life expectancy, years	15.1	48	
2.1.4	PISA scales in reading, maths & science	474.4	36	
2.1.5	Pupil-teacher ratio, secondary	10.0	29	
2.2	Tertiary education	39.5	38	
2.2.1	Tertiary enrolment, % gross	48.0	56	
2.2.2	Graduates in science & engineering, %	22.8	43	
2.2.3	Tertiary inbound mobility, %	8.9	23	
2.3	Research & development (R&D)	33.1	34	
2.3.1	Researchers, FTE/mn pop.	2,645.7	31	
2.3.2	Gross expenditure on R&D, % GDP	1.2	30	
2.3.3	Global R&D companies, top 3, mn US$	50.9	29	
2.3.4	QS university ranking, average score top 3*	21.3	51	
	Infrastructure	**49.6**	**49**	◇
3.1	Information & communication technologies (ICTs)	61.8	60	◇
3.1.1	ICT access*	77.8	33	
3.1.2	ICT use*	57.1	50	◇
3.1.3	Government's online service*	63.0	57	
3.1.4	E-participation*	49.2	89	○ ◇
3.2	General infrastructure	37.5	65	
3.2.1	Electricity output, kWh/cap	3,243.2	60	
3.2.2	Logistics performance*	63.2	30	
3.2.3	Gross capital formation, % GDP	19.6	93	○
3.3	Ecological sustainability	49.3	28	
3.3.1	GDP/unit of energy use	9.3	57	
3.3.2	Environmental performance*	65.0	39	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	8.3	10	● ◆
	Market sophistication	**42.9**	**86**	◇
4.1	Credit	29.3	90	◇
4.1.1	Ease of getting credit*	75.0	26	
4.1.2	Domestic credit to private sector, % GDP	34.4	90	◇
4.1.3	Microfinance gross loans, % GDP[4]	0.0	78	○
4.2	Investment	35.4	93	○ ◇
4.2.1	Ease of protecting minority investors*	50.0	92	○ ◇
4.2.2	Market capitalization, % GDP	14.2	73	○ ◇
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	Trade, competition, & market scale	63.8	54	
4.3.1	Applied tariff rate, weighted mean, %	1.6	19	
4.3.2	Intensity of local competition†	54.1	117	○ ◇
4.3.3	Domestic market scale, bn PPP$	283.6	56	

		Score/Value	Rank	
	Business sophistication	**40.7**	**32**	
5.1	Knowledge workers	40.1	54	
5.1.1	Knowledge-intensive employment, %	34.3	38	
5.1.2	Firms offering formal training, % firms	15.8	84	○ ◇
5.1.3	GERD performed by business, % GDP	0.9	22	
5.1.4	GERD financed by business, %	49.7	22	
5.1.5	Females employed w/advanced degrees, %	14.8	41	
5.2	Innovation linkages	27.5	69	◇
5.2.1	University/industry research collaboration†	40.5	65	
5.2.2	State of cluster development†	42.1	81	◇
5.2.3	GERD financed by abroad, %	15.0	30	
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.0	82	○
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.3	35	
5.3	Knowledge absorption	54.7	4	● ◆
5.3.1	Intellectual property payments, % total trade	0.9	43	
5.3.2	High-tech net imports, % total trade	14.0	15	●
5.3.3	ICT services imports, % total trade	1.3	58	
5.3.4	FDI net inflows, % GDP	19.8	5	● ◆
5.3.5	Research talent, % in business enterprise	59.1	12	●
	Knowledge & technology outputs	**45.3**	**16**	●
6.1	Knowledge creation	22.0	44	
6.1.1	Patents by origin/bn PPP$ GDP	2.7	37	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.5	33	
6.1.3	Utility models by origin/bn PPP$ GDP	1.0	24	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.1	34	
6.1.5	Citable documents H index	27.9	32	
6.2	Knowledge impact	49.4	20	
6.2.1	Growth rate of PPP$ GDP/worker, %	(0.2)	87	○
6.2.2	New businesses/th pop. 15–64	3.4	37	
6.2.3	Computer software spending, % GDP	0.3	36	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	24.3	14	● ◆
6.2.5	High- & medium-high-tech manufactures, %	0.6	6	● ◆
6.3	Knowledge diffusion	64.5	5	● ◆
6.3.1	Intellectual property receipts, % total trade	1.6	12	●
6.3.2	High-tech net exports, % total trade	14.5	9	● ◆
6.3.3	ICT services exports, % total trade	1.8	60	
6.3.4	FDI net outflows, % GDP	17.6	1	● ◆
	Creative outputs	**36.6**	**44**	
7.1	Intangible assets	43.2	61	
7.1.1	Trademarks by origin/bn PPP$ GDP	40.1	63	
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.0	33	
7.1.3	ICTs & business model creation†	64.1	50	
7.1.4	ICTs & organizational model creation†	58.5	48	
7.2	Creative goods & services	35.1	30	
7.2.1	Cultural & creative services exports, % total trade[4]	0.6	22	
7.2.2	National feature films/mn pop. 15–69	5.7	34	
7.2.3	Entertainment & Media market/th pop. 15–69	13.3	30	◇
7.2.4	Printing & other media, % manufacturing	0.8	69	○
7.2.5	Creative goods exports, % total trade	5.9	8	● ◆
7.3	Online creativity	25.0	31	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	10.3	39	
7.3.2	Country-code TLDs/th pop. 15–69	29.0	19	
7.3.3	Wikipedia edits/mn pop. 15–69	53.7	21	
7.3.4	Mobile app creation/bn PPP$ GDP	24.7	41	

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question.
[4] indicates that the country's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org.
Square brackets indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; see page 75 of this appendix for details.