
Do patents, trademarks and designs foster happiness in developed countries? An empirical analysis

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Abstract: Intellectual property rights are exclusive rights the law gives to authors and inventors to stimulate creativity and innovation. Intellectual property laws' justification assumes that the more creations and inventions there are, the better off the population is. Therefore, the law promotes innovation and creativity without limits. This paper challenges this assumption by analysing empirically data on patents, trademarks and designs and on life satisfaction. It finds that there is no correlation between trademarks and designs and life satisfaction but a strong correlation between patents and life satisfaction. However, passed a certain point, it is unclear whether more patents make people happier.

Keywords: intellectual property; happiness; life satisfaction; well-being; patents; trademarks; designs; copyright; developed nations; utilitarianism.

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1 Introduction

Intellectual property rights (IPR) are property rights in products of the mind, namely creations (such as novels, plays, paintings, sculptures, photographs, music), inventions (such as pharmaceuticals, engines, mobile phones, solar energy technology), designs (furniture, clothing, car body panels) and trademarks (signs attached to goods or services to distinguish them from other goods or services such as words and logos).¹ Copyright law protects creations, patent law protects inventions, design law protects designs and

trademark law protects signs. Intellectual property laws' main rationale in the European Union (EU) legal framework as well as its Member States' laws and in most developed countries is utilitarian [Derclaye and Leistner, (2011), pp.298–304].² The law gives IPR to authors and inventors to incentivise them to produce works and inventions. These exclusive rights give authors and inventors the possibility to recoup their investment by ensuring that they are the only ones to be allowed to sell their creations and inventions on the market for some time.³ In other words, they have a legal monopoly on their endeavours for a limited period of time. Trademark rights are slightly different in the sense that they do not strictly function as an incentive to the companies or individuals who affix their trademarks on their goods or services. Their original and main function is to indicate origin and avoid confusion. They thus also have a consumer protection role. However, since the end of the 20th century, courts have recognised them an investment function as well. This function is nevertheless far less dominant than in the patents, designs and copyright laws because it only really concerns famous marks (think Coca-Cola or Chanel). However, it is not clear whether the extensive IPR activity in countries contributes not only to the economic life of a country, but also to increasing the happiness of its citizens as measured in various happiness surveys. We can hypothesise that the more IPR a country has, the more opportunity for new products to come on the market in that particular country, thus increasing the level of happiness as people have more products to satisfy their needs and wants.

The study of happiness, despite being a popular subject to study at the moment, has a long history, especially when one considers discussions of 'utility' since the 17th century. The origin of the utilitarian rationale for IPR is Jeremy Bentham's principle of utility also known as the greatest happiness principle. According to this principle (Bentham, 1789), as humans seek pleasure rather than pain, policy-makers should maximise happiness and reduce suffering.⁴ The principle is also at the basis of welfare economics. However, over the years, economists came to assess feeling good or being happy by a single proxy, i.e., income. Happiness evaluated in non-monetary terms (for instance, spending time with family and friends, living in a nice environment) is not taken into account. The utilitarian rationale was in turn taken by the law and economics literature, and more precisely by the law and economists of IPR, to explain (Landes and Posner, 1987, 1989)⁵ and later on prescribe intellectual property laws (Landes and Posner, 2003).⁶ Since economic growth is desirable because it makes people happy, the creations and inventions IPR incentivise and protect need to be promoted. And the more the better. However, research on happiness shows that beyond a certain level of material wealth, more of it does not make people happier (Easterlin, 1974).⁷ The question thus arises also in relation to IPR. After a certain level, is too much intellectual property counterproductive for happiness? This paper addresses this question.

2 Data used and methodology

The motivation for this study is to determine whether or not there is any correlation between the number of patents, trademarks and designs in force per year and the overall happiness of the population in countries. The idea is that the more patents, trademarks or designs an individual or a corporation have, the better off and presumably happier that individual or individuals working for that company will be. While we do not investigate this interesting question⁸, we do investigate how a society with a higher number of

patents, patents, trademarks and designs in force has a higher or lower happiness. The question we are addressing, and thus the motivation for our study, is whether a higher number of patents, trademarks and designs in force per year within a country has any influence over the happiness of the entire country's population. One can imagine that if a country has a higher number of patents, trademarks and designs, this may lead to more products on the market, which will improve people's individual lives. Or more patents, trademarks and designs may reveal more economic and innovative activity which likewise can produce side effects in society such as a higher tax base and lower rate of unemployment. We also want to negate as much as possible in our study the effects of development in a country to minimise the effects of a rapidly developing society on happiness. This paper thus looks at the data only in developed countries where the number of patents, trademarks and designs should be relatively high in view of their state of development.

We use the concept of happiness known as life satisfaction or subjective well-being (Veenhoven, 2010). Life satisfaction surveys, which ask people whether, on the whole, they are satisfied with their life, measure this type of happiness. It is the tool that organisations have used the most frequently to measure happiness on a large scale, i.e., across countries over extended periods of time. Furthermore, inside the surveys, we have chosen the questions which ask about life satisfaction as they are generally more refined (scale of 1 to 10) than so-called happiness questions which often have just three possible answers. The validity of life satisfaction surveys is well-established because there is a "robust correlation between answers to subjective well-being questions and more objective measures of personal well-being" [Stevenson and Wolfers, (2008), p.3] and also with other subjective assessments by friends, family, doctors, etc. [Bok, (2010), p.39; Frey and Stutzer, (2009), pp.302–308; Layard, (2011), p.14; Powdthavee, (2007), pp.51–73]. There is also very little bias across cultures [Ouweneel and Veenhoven, (1991), p.168; Stevenson and Wolfers, (2008), p.4; Veenhoven, (2004), p.666].⁹

The paper analyses the data relating to patents, trademarks and designs. It does not do so for copyright because copyright is not a registered right and there are no available statistics on how many works are in force in a country in a given year. One would have to undertake a huge data collection task to do this (mainly via the collecting societies in every country).¹⁰ Still it would not account for works of authors who have not given a mandate to a collecting society¹¹ and for so-called orphan works (works for which the right holder cannot be traced). It would be somewhat easier to do in the USA as there is an official copyright registration system but this data would not be complete since the registration is voluntary and generally, only major works are registered and they are also orphan works.

We chose only one date to carry out this analysis (2006). Even so, we have had problems as not all selected countries have data for this single date. We did not want to reduce the number of countries as it would have made the results less compelling. We have tried to stick to the same datasets as much as possible to avoid skewing results.

The life satisfaction data we used is the 2005–2008 wave of the World Values Survey (WVS) and we had to use the European Social Survey (ESS) 2006 to complete data for a few countries which is missing in WVS, namely Austria, Belgium, Denmark, Hungary, Ireland and Slovakia. The life satisfaction data from the ESS shows comparable measures across countries with the WVS.¹² Redoing our analysis with these slightly different data, we find the same final results.

We chose most of the OECD countries as they are the most developed countries in the world.¹³ We chose the OECD for data on most controlling factors namely: GDP per person, consumer price index (CPI), tax as fraction of GDP and unemployment rate, because OECD data is extensive and complete for the relevant countries. We chose GDP per person and unemployment rate because they are known to correlate with happiness [Easterlin, (1974), p.54; Layard, (2011), p.172ff]. We used WVS data for the number of persons married or living together as married, air quality, religious activity, importance of religion and WHO data for per capita total expenditure on health to control for the correlations that have been found between happiness on the one hand and marital status, quality of the environment, influence of spirituality and quality of healthcare.¹⁴ We added two other factors namely CPI and tax as fraction of GDP because we think there is a possible correlation with happiness.¹⁵ We did not control for the usual factors such as rule of law and life expectancy because they do not differ much if at all in those developed countries.

We use the number of patents, trademarks and designs in force per year because the number of patents, trademarks and designs in force in any given year affects the population equally. Patents in force mean those which have been granted by the relevant patent offices and are still valid during the 20 year term of protection. Patents which are valid during that term are so as a result of the patentee paying the patent office's regular fees to maintain the patent in force and because the patents have not been challenged in court or have been challenged but upheld as valid. The same goes for trademarks and designs except that designs' term varies per country and trademarks are perpetual if their owners continually renew them in each national intellectual property office.

For more information on the data we used, see Annex below.

Finally, as in the existing happiness literature, when we analyse the relationship between life satisfaction and IPR, we do so to determine correlations rather than try to establish causality [Stevenson and Wolfers, (2008), p.5].

3 Results

3.1 Patents

Happiness correlates with many features in society. Although we are investigating in this paper how happiness correlates with patents, trademarks and designs, in effect, there are other correlations with happiness that we must also investigate and account for. The correlations we investigate with happiness are the GDP per person, the CPI, the tax fraction of the GDP, the unemployment rate, the married fraction in the population, the religious fraction and the amount spent on healthcare in the country.

We find that there are very few strong correlations with happiness. Most correlations are however consistent with there being a zero slope in the relation with happiness. The strongest raw correlations we find are with the number of patents in force, the healthcare costs, and the tax rate. We find that the relation between the healthcare spending and happiness has a slope of 2.28 ± 0.7 , which is significant at the 98% level, and such that the higher the healthcare spending, the higher the happiness. We find a slightly less significant correlation between happiness and the tax rate, such that the slope is 0.068 ± 0.028 at the 95% level. These are the only two strong and significant correlations we find with happiness.

We also find a strong relation as well between happiness and the patents in force. We first describe this correlation and then how the correlation still exists when considering the effects of the healthcare spending and the tax rate. We carry out a multiregressional analysis to confirm this result and to show that it does not depend upon the other two significant correlations we find. Thus, we can confirm that up until the turn over point discussed below, there is a real trend between the happiness and the patents in force per year.

To quantify how the happiness (H) correlates to the number of patents in force per year in a country, we show the relationship between these quantities in Figure 1. This shows that there is a clear trend such that the happiness (H) goes up with the number of patents in force per year (PPY). However, there is a levelling off of this happiness at about $10^{4.6}$ patents in force per year. We find this turn over point in the number of patents in force per year by fitting the positive relationship up to the highest values of the happiness. We then fit the points at higher values of patents in force per year as another line. This turn over point is determined where these two lines are fit. When we fit by a parabolic line we find that the peak is at the same location.

Thus, overall we find that there is a strong correlation between these two up to this limit with a well-fit relationship given by

$$H = \log(PPY^{1.28+/-0.36}) + (1.83 + / -1.36)$$

This shows that there is a well-defined slope which is significant to over three-sigma or at 99.7% certainty. The intercept is not as well constrained as the slope, and shows more uncertainty, yet the slope is the critical aspect of this fit and demonstrates that there is indeed a strong relationship between the PPY and happiness in different developed countries throughout the world.

Interestingly, we also find that after this limit of $\log(PPY) = 4.6$, the happiness levels (H) begin to slightly decline or perhaps level off. We fit the relationship between PPY and H at PPY levels greater than $10^{4.6}$ as:

$$H = \log(PPY^{-0.61+/-0.21}) + (10.6 + / -1.1)$$

This shows that after values of $\log(PPY) = 4.6$, the correlation between the happiness and the values of PPY is anti-correlated. The slope of this relation is just lower than three-sigma, implying a good correlation, but not as strong as that seen when the values are less than $\log(PPY) < 4.6$. This correlation however implies that there is a certain value of patents in force per year that gives the greatest level of happiness for countries, and that beyond this value there is a slight decline in happiness when more patents are in force. We discuss the reasons for this in the following sections.

We also investigate how other possible trends with happiness may be affecting this result. The basic issue is that other factors, such as the tax rate, CPI and GDP all can correlate with happiness and this may affect or drive the correlation we see with the PPY, as described above.

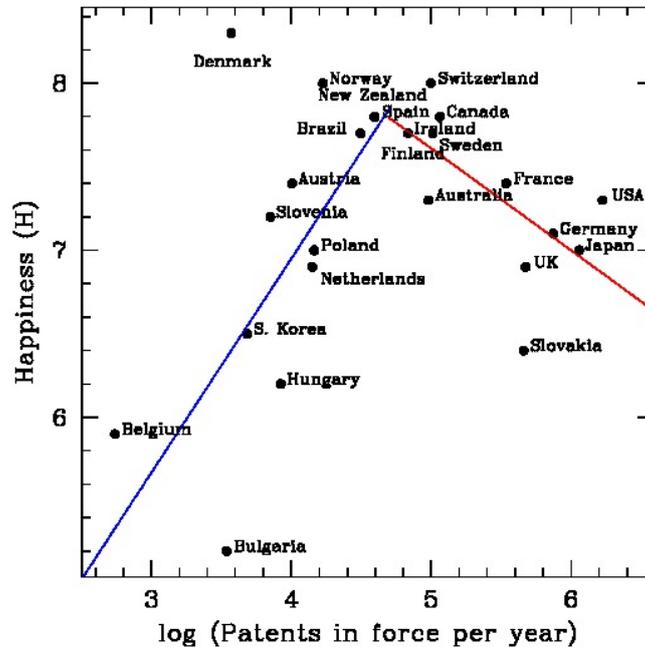
We thus investigated the correlation between happiness (H) and these other factors. As mentioned earlier, we find no strong correlations with any of these, with the exception of the tax rate and healthcare costs. We make the simple assumption here that these two parameters do not fundamentally correlate with patents. There is an observed correlation between these two parameters and patents, but it is unlikely that the level of patents per year has an effect on health spending and tax rates, as these are more fundamentally

correlating with the happiness.¹⁶ Thus, we remove the effects of these two parameters from the correlation and still determine that there is a relation between happiness and patents after these other two parameters are accounted for. We find that the higher the taxes on personal income as a percentage of gross domestic product in a country, the higher the level of happiness. This is likely a result of more public services being available and occurs in more egalitarian societies such as Denmark and other Scandinavian countries.

To account for this we perform a least-squares fit between the happiness and the tax rate and then we use this correlation as the measure of how tax rates affect the overall happiness. We remove this term from the happiness, effectively taking out the average effect of tax rates per GDP on happiness. We do this by subtracting the fit between happiness and the tax rate from the measure of happiness. This gives us a new measure of the happiness with the effects of the tax rate removed. We thus obtain a new happiness parameter defined as the residuals from the fit between happiness and the tax rate. We still find a strong three-sigma correlation between this new happiness measurement, minus the effects from taxes, and the happiness at PPY levels of less than $10^{4.6}$. And this remains the case if we also remove the contribution in a similar way due to the healthcare costs. This shows that even after holding for other factors such as the higher tax rate and thus the egalitarian aspects of society, that there is still a very strong and significant correlation ($>$ three-sigma correlation) between the number of patents in force in a country per year and the level of happiness.

We however do not see that the decline at levels of PPY greater than $10^{4.6}$ remains as significant. This may reveal that this decline is driven at least in part by the relationship between tax rates and happiness and not due to the number of patents.

Figure 1 Level of happiness and number of patents in force per country per year, in the year 2006 (see online version for colours)



3.2 *Designs and trademarks*

We performed the same analysis for trademarks and designs respectively. However, we found no correlation.

4 **Interpretation of results**

4.1 *Patents*

We interpret these results as showing that happiness is influenced in countries by the number of patents in force per year. We find two major findings related to this. The first is that happiness goes up until the level of $10^{4.6}$ patents per year, but then happiness declines thereafter.

Our interpretation of this is that as the number of patents in a country grows, there are more new products available for the population. This can include technology such as computers and new home appliances and technology for medicine and infrastructure that improve people's lives. The correlation may not only be due to an effect of inventions and creations on happiness, but may also reflect greater inventiveness in happier nations. There is evidence at the individual level that happiness fosters creativity (Delhey, 2010; Pannels and Claxton, 2008; Veenhoven, 1988, 2013). However, if the correlation may show also greater inventiveness in happier nations, the data is not that conclusive on this point because it does not identify the patents filed per resident but all those in force in that country who can have thus been filed by anyone from anywhere in the world in that country. It is possible to have a country where patent, trademark or design activity is low among residents and most of those who file patents, designs and trademarks in that country are foreigners.

It is more challenging to explain the downward trend with less happiness past the level of $10^{4.6}$ patents per year. This trend does not remain as strong after accounting for the level of happiness correlation with the tax rate, so it may not be a real effect. However, it is possible that there can be too many new patents in a country and this has a detrimental effect on the population. One way this might be the case is that too many patents make it more difficult to bring new products to the market place due to having more legal restrictions from other competitors, thus limiting or slowing down the introduction of new technology. Another may be that people have too much choice and this decreases their happiness. At least for those people who are affected by having too much choice (so-called maximisers) [Schwartz and Ward, (2004), p.86ff].¹⁷

Our main conclusion is however that there is an increase in the happiness of countries when more patents are introduced and this limit on happiness occurs at some point and thereafter levels off or declines. This may mean that patents are a way to increase the happiness in a country but only up a certain point. Future research will be directed at trying to understand why increasing the number of patents per person beyond $10^{4.6}$ does not lead to an increase in the happiness in the country.

4.2 *Trademarks and designs*

In relation to trademarks, the results are not surprising as trademarks do not pertain to the products themselves but to the signs that identify them and therefore trademarks do not in

most cases have the effect of stifling innovation. It may be that for designs the peak which shows in the data for patents is not reached because there are far fewer designs in force in most countries in comparison to the numbers of patents in force (around half or less than half the number of patents). There are only six out of 20 countries (countries with data for both patents and designs, including the Benelux which we count as one country here because of its single design registration system) which have a similar or sometimes higher number of designs in force per year. It may also be that designs do not have the same effect on people than patents.

In conclusion, it is not yet possible to conclude that too many IPR are counterproductive for happiness. More research is needed. In this respect, happiness is not a new concept meant to replace economic growth – in fact, this article seems to point towards the finding that patents, as one of ways of stimulating economic growth, also increase happiness – but is rather a way to refine the traditional economic analysis of IPR, in effect, to bring IPR back to the utilitarian rationale's original and true meaning (Derclaye, 2013).

5 Next steps

Apart from trying to understand why a higher number of patents does not increase happiness passed the peak point, in the next papers, we will also repeat this experiment for a couple years before and after 2006 to confirm or infirm these results. We will also analyse the same data for more countries including least developed countries (LDCs) and developing countries (DCs). We suspect that since the number of patents must probably be lower in those countries, these countries will follow the correlation we found and happiness will be lower too.

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Notes

- 1 These are the main intellectual property rights, there are others as well such as geographical indications and plant variety rights but they are somewhat less important as they are less used or used in combination with the main IPR.
- 2 Traditionally, namely since the Enlightenment (when intellectual property laws were first adopted) and up until recently, intellectual property laws have been based broadly on two main rationales: the natural rights theory (in which one can include Locke's labour theory) and utilitarianism. In the 20th century, at least in the Western world, utilitarianism largely won the battle of ideas to justify intellectual property. On utilitarianism, Encyclopædia Britannica Online Academic Edition (2012) [online] <http://www.britannica.com/EBchecked/topic/620682/utilitarianism> (accessed 1 July 2013).
- 3 In developed countries, patents have a 20 year term, copyright generally has a term of 50 or 70 years after the death of the author, designs generally have a five-year term renewable up to 25 years. Trademarks are perpetual so long as they are used but do not attach to a creation or invention as such but only to the sign attached on a product (be it or not protected by a patent, design or copyright).
- 4 See also the writings of J. Stuart Mill.
- 5 So in this case, law and economics is used in a positive rather than normative way.
- 6 In this case, the authors use law and economics normatively.
- 7 See the so-called Easterlin paradox. But see more recently, challenging these findings (Stevenson and Wolfers, 2013).
- 8 This research could be performed by asking a statistically significant number of individual inventors with a certain number of patents in each country, on a scale of 1 to 10 how happy they are.
- 9 Cultural bias can exist because the word happiness is not translated correctly and/or because people tend to give less accurate answers due to their culture (e.g., to save face).
- 10 A collecting society is an organism that collects royalties on behalf of right holders. The latter must generally give a mandate to the society in order for it to collect the royalty on his or her behalf. Examples of such societies are SACEM, SABAM, CISAC, PRS for Music, BASCA, BMI, ASCAP, etc.
- 11 Except to some extent for countries, like the Scandinavian countries, which have an extended collective licensing scheme. On extended collective licensing see, e.g., Riis and Schovsbo (2012).
- 12 Switzerland same value, Germany 7.0 in ESS against 7.1 in WVS, Spain 7.6 against 7.8, Finland 8.0 against 7.8, France 7.1 against 7.4, UK 7.4 against 6.9, Ireland 7.6 against 7.7, the Netherlands 7.6 against 6.9, Norway 7.9 against 8.0, Poland 7.2 against 7.0., Slovenia and Slovakia same values.
- 13 [online] <http://www.oecd.org/about/membersandpartners> (accessed 1 July 2013). We had to exclude some because of missing data either on IPR or on life satisfaction, e.g., Italy, Greece, Israel.
- 14 For a review of the literature on correlations between different factors and happiness, see e.g., Dolan et al. (2006).
- 15 In this connection, Layard (2011, p.233) argues that it is important to monitor taxes, which play a role in preserving the work-life balance and performance-related pay, which tend to encourage the status race.
- 16 It is however possible that there is a correlation between pharmaceutical patents and healthcare costs but we have not performed such analysis here.
- 17 The more choice one has the more the potential to choose suboptimally and the greater the possibility to regret this choice is; therefore the person is less happy. There are several factors which explain this paradox, i.e., that more choice does not make people happier: regret, opportunity costs, effects of adaption, high expectations, social comparison, learned helplessness, control, depression and self-blame. There are two types of people: maximisers and satisficers. Maximisers suffer more from having more choice because they are more affected by the above factors (social comparison, adaptation...).

Annex

#country	num_patents_inforce	happiness	gdp/person	cpi	tax_frac_gdp	unemployment_rate	tm_in_force	des_in_force	married	air_qual	act_relig	relig_import	health
France	343,568	7.4	31,048	101.683726	7.8	8.9	1,078,000	488,933	63.9	-99	4.4	40.9	3,937
UK	473,904	6.9	32,990	102.333528	10.5	5.5	419,527	56,080	57.3	-99	19.2	40.7	3,332
Netherlands	14,091	6.9	36,548	101.167653	7.3	4.3	See below	Benelux	62.5	-99	14.4	-99	3,872
Spain	39,297	7.8	29,382	103.515805	7.0	8.6	855,001	56,929	63	-99	9.1	37.1	2,328
USA	1,683,968	7.3	43,801	103.226944	10.1	4.7	1,304,333	201,679	53.6	68.9	37.9	71.6	6,719
Norway	16,837	8.0	52,048	102.332150	9.0	3.5	-99	-99	66.2	24.8	8.3	32.7	6,267
Sweden	102,741	7.7	34,870	101.360215	15.5	7.1	-99	-99	63.3	21.6	6.9	29.4	3,973
Finland	39,450	7.8	32,736	101.566667	13.3	7.7	117,285	4,501	61.6	28.8	17.6	45.1	3,232
Poland	14,578	7.0	14,641	101.114944	4.6	14	97,916	9,463	60.7	73.8	12.9	86.8	555
Switzerland	99,531	8.0	37,747	101.058778	8.8	4.1	202,526	8,087	57.3	48.8	22.9	45.5	5,660
Germany	748,542	7.1	31,950	101.577429	8.6	10.4	744,769	302,202	71	33.1	12.9	33.9	3,718
Australia	95,924	7.3	35,453	103.538487	11.0	4.9	417,859	37,096	-99	-99	-99	39.2	3,302
Austria	10,126	7.4	35,695	101.449636	9.3	4.8	112,403	30,631	-99	-99	-99	-99	3,974
Belgium	548	5.9	33,527	101.790941	12.3	8.3	See below	Benelux	-99	-99	-99	-99	3,726
Canada	115,639	7.8	36,813	102.002025	11.9	6.4	396,012	22,898	63.1	51.4	27.9	-99	3,927
Denmark	3,711	8.3	35,217	101.890073	24.8	4.0	164,988	6,516	-99	-99	-99	-99	5,447
Hungary	8,408	6.2	18,154	103.878312	6.8	7.5	202,770	2,204	-99	-99	-99	-99	929
Ireland	68,298	7.7	40,716	103.938895	8.7	4.7	88,221	3,059	-99	-99	-99	-99	3,871
Japan	1,146,871	7.0	31,919	100.240664	5.2	4.3	1,785,122	257,327	74.5	51	4.4	19.6	2,759
S. Korea	458,585	6.4	23,038	102.241726	3.8	3.6	590,990	169,623	67.7	53.2	17.5	47	1,168
Slovak-rep.	4,830	6.5	17,585	104.483331	2.5	13.3	44,333	1,493	-99	-99	-99	-99	735
Slovenia	7,073	7.2	-99	102.462562	5.8	6.1	122,747	818	64.5	39.2	12.4	42.9	1,607
Brazil	31,221	7.7	-99	104.183681	-99	-99	-99	-99	58.4	63.1	50.5	91	427
Bulgaria	3,441	5.2	-99	107.261613	-99	-99	-99	-99	69.5	80.5	1.9	50.8	297
New Zealand	13,825	7.9	25,910	103.365404	14.6	14.6	3.9	186,529	8348	70.8	-99	17.7	35.8
For trademark and designs (as they can only be filed in the Benelux and not in only one of the three Benelux countries):													
Benelux (averages of the three countries)	-99	-99	-99	-99	6.4	27,367,100	409,404	101.878146	9.0	5.7	576,429	16,014	
NB Luxembourg data is:	25,728	-99	-99	-99	-99	473,000	78,138	102.675844	7.5	4.7	-99	-99	
-99 indicates missing data.													

- Patents, trademarks and designs in force in 2006. WIPO intellectual property statistics data centre. <http://ipstatsdb.wipo.org/ipstatv2/ipstats/patentsSearch>. Data was missing for a small number of countries for 2006. In that case, we have taken the data from 2005. Data was totally missing for some countries including Ireland and Norway. We obtained the statistics from the Irish patent office's annual report for 2006, available at Irish patent office website: 68,298 number of patents in force as of 31/12/2006. We obtained the data directly from the Norwegian patent office (e-mail on file with the author).
- Life satisfaction data from the 2005–2008 wave of the World Values Survey (WVS) and the European Social Survey (ESS) 2006 to complete missing data in WVS.
- GDP per capita, US dollars, current prices and PPPs, 2006 or latest available year. OECD Factbook 2008: Economic, Environmental and Social Statistics – ISBN 92-64-04054-4 – © OECD 2008
- Consumer price index 2006, World Bank, available at <http://data.worldbank.org/indicator/FP.CPI.TOTL>. Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.
- Taxes on personal income as a percentage of gross domestic product, 2006. Taxation: key tables from OECD – ISSN 2075-8510 – © OECD 2012.
- Unemployment rate, % of labour force. Employment and labour markets: key tables from OECD – ISSN 2075-2342 – © OECD 2012.
- Number of people married or living together as married. 2005–2008 wave of the WVS.
- Environmental problems in your community: poor air quality – addition of 'very serious' and 'somewhat serious'. 2005–2008 wave of the WVS.
- Active membership of church or religious organisation. 2005–2008 wave of the WVS.
- Religion is important in life (addition of 'important' and 'rather important'). 2005–2008 wave of the WVS.
- Per capita total expenditure on health at average exchange rate (US\$), WHO World Health Statistics 2009, data for 2006.