GLOBALISATION AND SOCIAL SPENDING

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Abstract

We provide evidence indicating that countries with well-developed social security systems do not necessarily face a trade-off between social spending and competitiveness. On average, countries that spend a lot on social needs score well in the competitiveness league. We investigate the importance of a reverse causality from competitiveness to social spending, and find that this is weak. We also present some possible explanations for our empirical finding. Finally, we interpret our findings in the framework of a theoretical model in which risk affects the size of the social sector and in which social spending affects the production function of the private sector.

Keywords: economic integration, globalisation, terms-of-trade variability, international trade.

JEL Code: F02, F10, F15.

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1. Introduction

There is an increasing perception that the forces of globalisation put the systems of social security in the rich countries at risk. Such a perception is based on an intuitive idea that social security is expensive as it raises the cost of labour. As a result, profit maximising firms tend to curtail their activities in countries with high labour cost and move to places where the cost of labour is low and where the social security system is less extensive. As rich countries open their markets to imports from countries with lower labour standards and lower wages, employers and governments in rich countries are forced to adopt similar low standards in order to remain competitive. These phenomena create pressures on the countries with well-developed social security systems to scale back on them. It is claimed that a 'race to the bottom' is set in motion, whereby the competitive pressures arising from globalisation slowly erode social security. If not controlled, this dynamics may destroy one of the great social achievements of industrialised countries – their capacity to guarantee a reasonable income to all citizens hit by unfavourable conditions.

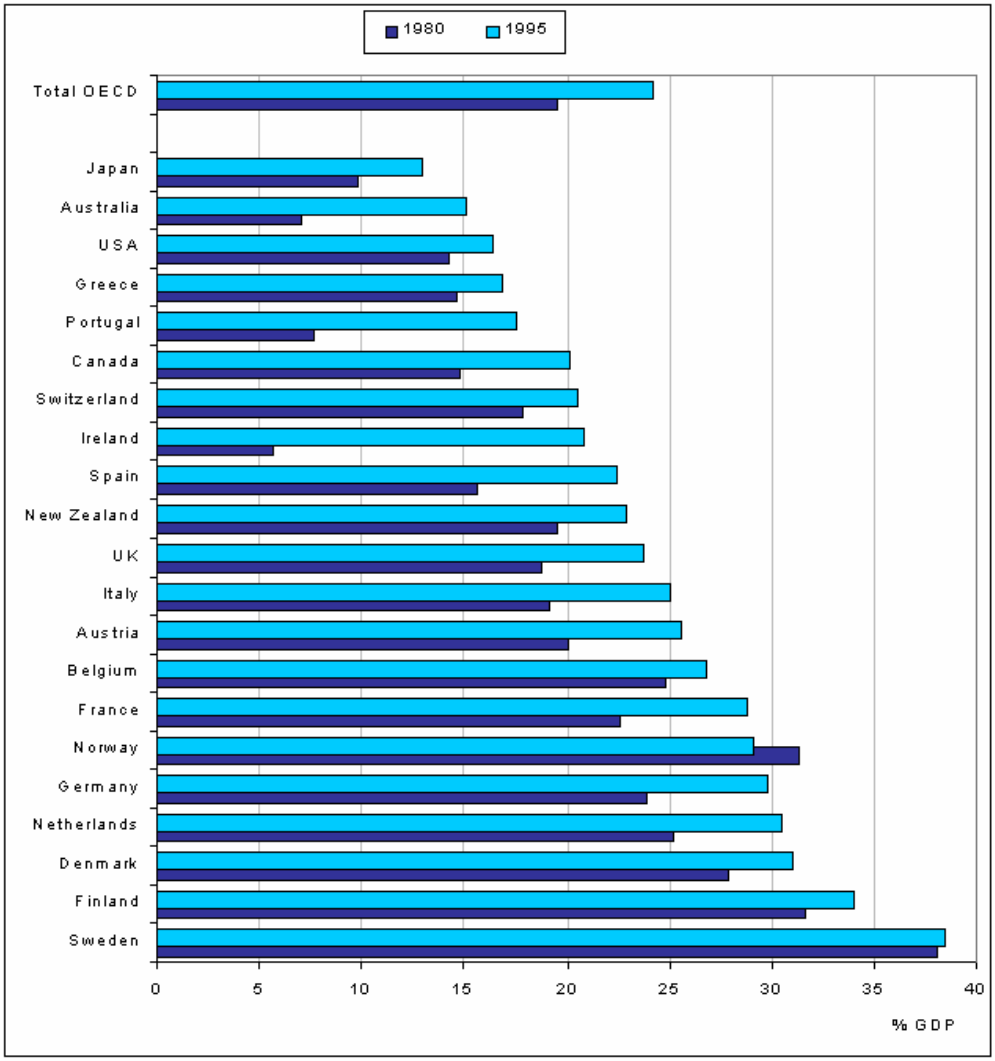
How serious is this race-to-the-bottom scenario? This is the question we address in this work and we show that the rich countries (we analyse a sample of the OECD countries) that are most competitive in the global marketplace are the same that spend most on their social needs. At the same time, we show that an increase in trade integration, and, therefore, a larger exposure to the international risk, does not have a clearly-cut effect on either the social spending or the competitiveness. We provide both the theoretical and empirical analysis of the problem.

2. The facts

It is useful to start from the facts. Globalisation is the process that has been observed for a prolonged period. In particular, after the Second World War richer countries have opened up to trade, unleashing the forces of globalisation. A specially strong acceleration occurred in the last two decades, when an increasing number of countries opened up their borders. As a result, the end of the 20th century brought about exposure of industrial economies to free markets in goods and capital, and to competition in global markets, stemming from both developed

and developing countries. How has social security fared in the industrialised world during this period? One way to answer this question is to analyse the trends in social spending. We do this in Figure 1, which shows social spending (as a percentage of the GDP) in the OECD countries in 1980 and 1995. The most striking feature is that in almost all countries (except Norway) social expenditures have increased between 1980 and 1995. For the OECD area as a whole, social spending increased from 19.5% to 24% of GDP. Thus, if there is a race-to-the-bottom, as claimed by the opponents of the globalisation, then this force has been rather weak in the recent past.

Figure 1: Social spending in the OECD countries in 1980 and 1995.



Clearly this evidence is only indicative. One could argue that globalisation forces have not yet reached their ultimate strength, and that in the future, the race-to-the-

bottom dynamics will operate with full force. There is an indirect way to check such a statement. Levels of social protection vary among industrial countries. Some of them, like Scandinavian countries, have gone very far in developing extensive and expensive systems of social security. Others, for example Southern European countries, are less advanced and elaborate in social protection. If the race-to-the bottom hypothesis is correct, one should observe that countries that spend a lot on social security pay a price in terms of competitiveness, and are increasingly confronted with the race-to-the-bottom syndrome. To check this, in the next section we analyse in detail the relationship between social expenditures and competitiveness.

3. Social security and competitiveness

Competitiveness has many dimensions[1]. One of them is price competitiveness, which is determined mainly by the evolution of the domestic costs relative to the foreign ones. This is the dimension that critics have in mind when they argue that because social security increases labour costs, it also reduces competitiveness. There are other dimensions to competitiveness, however. These relate to the capacity of countries to innovate, to develop new products and technologies. These capacities are very much influenced by the quality and the motivation of the human capital of nations. Nations with a poor quality and motivation of their workers will not be innovative and, although their products may be cheap, will nevertheless demonstrate a poor level of competitiveness.

The quality of the human capital and the motivation of people are influenced by the quality of the educational system and the rewards that workers obtain from a good education. Besides, the quantity and quality of physical capital, including collective goods (e.g. infrastructure) affects competitiveness. Finally and most importantly, competitiveness also depends on the quality of domestic institutions. Strong legal and social institutions (including social security) contribute to increasing the productivity of the workforce and reduce social conflicts, which are damaging to the economic prosperity in the long run. Effective and not corrupted

[1] *The "official" definition of OECD of a nation's competitiveness is "the degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term".*

governments, strong and fast execution of the laws, absence of constraints imposed on private firms and entrepreneurial spirit – all these and the earlier mentioned factors affect the competitiveness of nations.

Quantitative information about competitiveness that includes various dimensions of this concept is not easy to construct. Two organisations, however, the IMD of Lausanne and the World Economic Forum, compute such indices and rank nations accordingly[2]. These indices synthesise the different dimensions of the notion of competitiveness of nations (cost and price competitiveness, capacity to innovate, quality of human capital, efficiency of government sector, and other indicators). In such a set-up, competitiveness should be understood as the capacity of economies to sustain the forces driving the open world economy. As such, indices constructed by the IMD or the World Economic Forum measure the quality of institutions that make countries competitive, and therefore capabilities of economies to compete, rather than actual performances in the international markets (e.g. market shares or current account figures). We describe the rankings in more detail in appendix.

We show the two aforementioned indices and compare rankings of the countries from our sample. This is done in Figure 2 and Table 1. We observe that, although the classification of countries in terms of their competitiveness is not the same, there is a reasonable degree of coherence between the two. The correlation coefficient between these two rankings is on average 0.8 (in 1999, 2000 and 2001).

[2] *See World Competitiveness Report, IMD, Lausanne. These indices and the underlying methodology can be found on the website: www.imd.ch and Global Competitiveness Report 2001-2002: www.weforum.org/pdf/gcr/Overall_Competitiveness_Rankings.pdf.*

Figure 2: Scatter diagram of alternative indices of competitiveness.

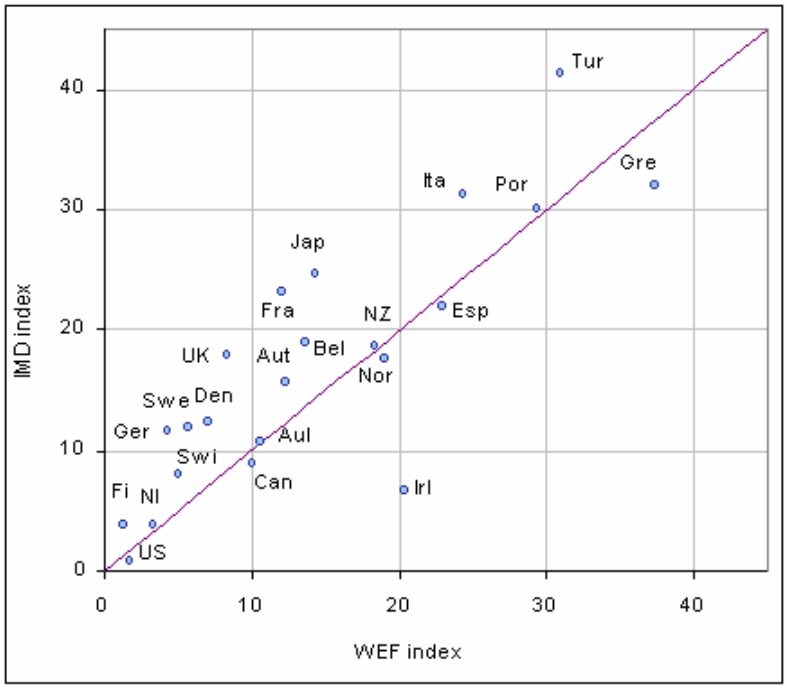


Table 1: The average IMD and WEF competitiveness rankings.

IMD	1998-2002	WEF	1999-2001
USA	1	USA	2
Finland	2	Finland	1
Netherlands	3	Netherlands	3
Ireland	4	Ireland	17
Switzerland	5	Switzerland	5
Canada	6	Canada	9
Denmark	7	Denmark	7
Australia	8	Australia	10
Sweden	9	Sweden	6
Germany	10	Germany	4
Norway	11	Norway	16
UK	12	UK	8
Austria	13	Austria	12
New Zealand	14	New Zealand	15
Belgium	15	Belgium	13
France	16	France	11
Spain	17	Spain	18
Japan	18	Japan	14
Portugal	19	Portugal	20
Italy	20	Italy	19
Greece	21	Greece	21

Next, we compare the competitiveness rankings with social spending by the OECD countries. Social spending includes spending on unemployment, disability, health care, pension, family services (including child benefits) and housing. We restrict the analysis to the OECD countries for three reasons. First, these are the only countries for which comparable data on social spending exist. Second, as was said in the introduction, we want to test the 'race-to-the-bottom' hypothesis that has been formulated by the globalisation critics. It applies to rich countries, as it says that globalisation will force the rich countries to contract their social spending and to move towards the system with minimum social spending that is prevalent in poor countries.

Third, there exist large differences in the ways governments in poor and rich countries redistribute national income. Rich countries have well developed redistribution 'infrastructures'. In these countries authorities address social needs through social expenditures. The contrary is true in poor countries, where redistribution is carried out through government consumption and where a job in the public sector or employment offered by public works constitute sources of income.

Scatter diagrams and regression lines in Figure 3 and Figure 4 show the relation between the competitiveness indices and social spending. The regression results themselves are shown in Table 2 and Table 3.

Figure 3: Social spending and IMD competitiveness index.

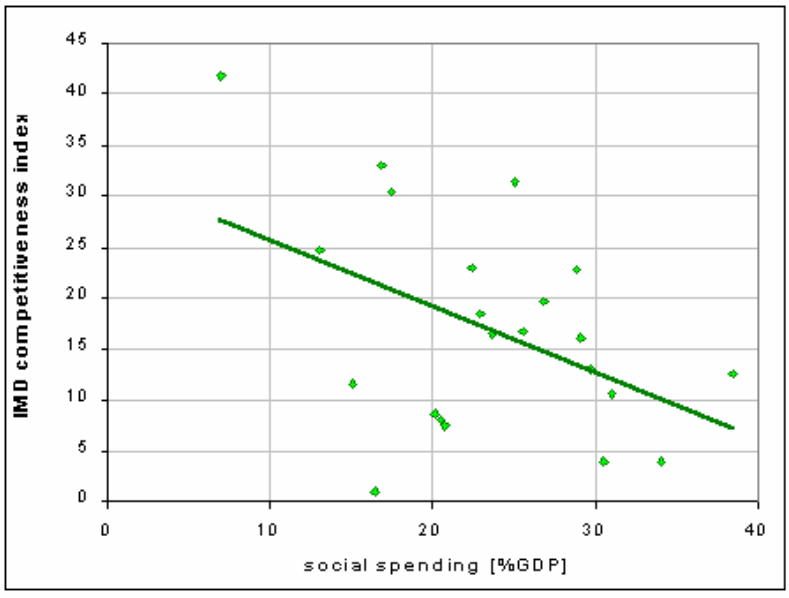
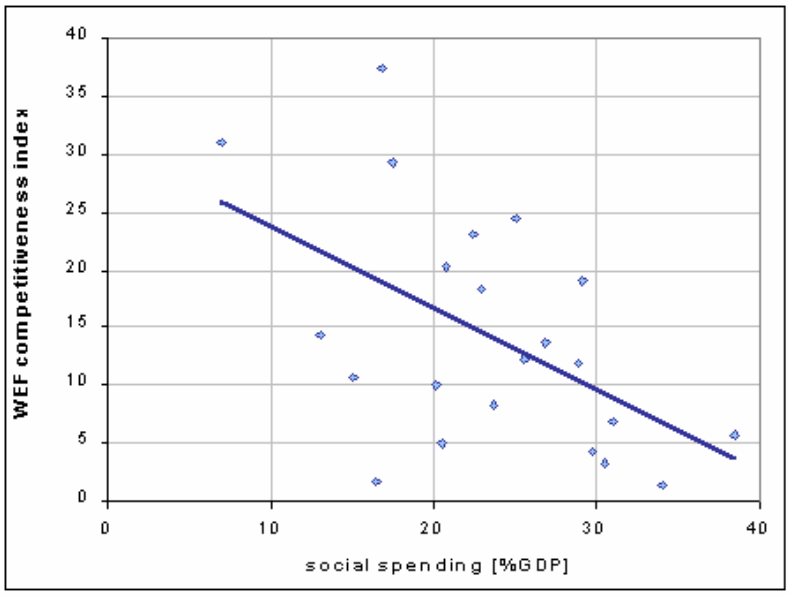


Figure 4: Social spending and WEF competitiveness index.



The results suggest that there is a negative relation between the competitiveness ranking and social spending. It means that the countries that spend larger proportions of their domestic products on social needs also score best on the competitiveness scale (they have a low number in the ranking)[3]. Note that we relate the average competitiveness during 1998-2002 (IMD) or 1999-2001 (WEF) to the social spending in 1997 (this is the last available observation that is comparable across OECD countries). In so doing we minimize the potential for a reverse causality. Reverse causality would occur if the countries with a high competitiveness rank created more domestic value added (their domestic product would be higher) and that, in turn, allowed them to spend more on social needs. By regressing competitiveness on past values of social spending, we eliminate reverse causality as a possible explanation of the negative relations between social spending and competitiveness rankings. We return to this issue, however, because it can be argued that social spending does not vary much over time and that the reverse causality can easily re-emerge as a problem.

[3] *Note that the US is the most notorious exception to this rule; it is ranked first (according to IMD) and second (according to WEF) in terms of competitiveness during 1997-2001 and spends relatively little on social security, i.e. only 17%, compared to about 30% in most Northern European countries. Figure 3 and Figure 4 make clear that the US is the exception to the rule. Nevertheless, the experience of the US has very much influenced the perception of the critics, who now claim that the US experience of high competitiveness and low social spending is a forebode of what globalisation will do in Northern Europe.*

Table 2: IMD (average of 1998-2002) on social spending.

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.912	7.6617	3.2514	0.0042
social spending	**-0.3725**	0.3057	-1.2186	**0.2379**
R-squared	0.0725	Mean dependent var		15.895
Adjusted R-squared	0.0237	S.D. dependent var		9.2209
S.E. of regression	9.1112	Akaike info criterion		7.3473
Sum squared resid	1577.2	Schwarz criterion		7.4468
Log likelihood	-75.146	F-statistic		1.4849
Durbin-Watson stat	1.7683	Prob (F-statistic)		0.2379

Table 3: WEF (average of 1999-2001) on social spending.

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27.980	7.4879	3.7367	0.0014
social spending	**-0.6025**	0.2987	-2.0167	**0.0581**
R-squared	0.1763	Mean dependent var		13.396
Adjusted R-squared	0.1329	S.D. dependent var		9.5629
S.E. of regression	8.9044	Akaike info criterion		7.3013
Sum squared resid	1506.5	Schwarz criterion		7.4008
Log likelihood	-74.664	F-statistic		4.0672
Durbin-Watson stat	1.9107	Prob (F-statistic)		0.0580

We also observe from the results shown in Table 2 and Table 3 that the negative relations between social spending and competitiveness ranking is stronger in the WEF sample than in the IMD one. In the former we obtain a significantly negative coefficient, while for the latter the coefficient is negative but statistically insignificant. Note that the relatively low R-squared implies that a lot of the inter-country variation in competitiveness is left unexplained by focusing on social spending only.

The statistical analysis presented in this section is very elementary and rudimentary. It is important to put these results in a broader theoretical framework. This will also allow us to control for other variables that can explain inter-country differences in competitiveness.

4. Social spending, risk and competitiveness.

The relation between social spending and the economy is a very complex one.

The first thing to note is that most likely there is simultaneity in the relation between competitiveness and social spending, i.e. causality is likely to run in both directions. Thus, countries that are highly competitive generate a lot of value added (they have a higher GDP), what allows them to spend more on social needs. Conversely, high social spending may influence the productivity of workers and, through this channel, affects the competitiveness of nations. We would like to disentangle these two causal relations.

Let us start from one of the theories analysing the determinants of social spending which was developed by Rodrik (1998a, 1998b). Rodrik asked the question of how countries decide to increase or to reduce social spending. His analysis can be summarised as follows.

The decision to spend on social needs is based on several factors. First, the level of the income per capita matters. When income per capita increases, the desire to spend proportionally more on social needs increases. Thus, one should expect that rich countries have a relatively high level of social spending. In a way social spending can be called a “luxury” good, in the sense that the income elasticity of the demand for social spending exceeds one. This idea is a very old one.

Second, fluctuations in the terms of trade are an important source of risk in open economies and lead to a greater demand for social spending. Since the external shocks cannot easily be diversified away, citizens of open economies demand more social spending from their governments when the external risk increases. Thus countries experiencing a greater volatility of their terms of trade should be observed to spend more on social needs than countries with less volatility. This hypothesis is also confirmed by the research of Rodrik.

Taking the previous discussion into account, we specify an equation that relates social spending to competitiveness, terms of trade risk, and the GDP per capita:

(1) $SS_i = b_0 + b_1\, Competitiveness_i + b_2\, TOT(V)_i + b_3\, GDP_i;$

where SS_i is social spending as a percentage of total GDP in country i; GDP_i is GDP per capita in country i, $TOT(V)_i$ is the variability of the terms of trade of country i (measured as the ratio of the standard deviation to the mean; expressed as percentage points); and m_i is the error term. We added the term $COMP_i$ to the equation because as argued earlier there is a need to control for the possibility of

a reverse causation, i.e. the possibility that countries which experience a high level of competitiveness acquire the means to invest in social security. We can refer to such causality as ‘a virtuous circle’.

Our second equation explains competitiveness by social spending, level of GDP per capita and openness ($OPEN_i$ is the openness of country i measured as the ratio of exports + imports to the total GDP, in percentage points). We add the variable ‘openness’ as an instrumental variable to as to satisfy the identification condition:

(2) $Competitiveness_i = a_0 + a_1 SS_i + a_2 GDP_i + a_3 Open_i$

Combining the two equations, we obtain a system of two simultaneous equations. We use two indicators of competitiveness – the IMD indicator and the WEF indicator. As a result we estimate two models, each consisting of two corresponding equations.

System 1 (IMD):

(3) $IMD_i = a_0 + a_1 SS_i + a_2 GDP_i + a_3 Open_i + e_i$

(4) $SS_i = b_0 + b_0 IMD_i + b_0 tot(V)_i + b_0 GDP_i + m_i$

System 2 (WEF):

(5) $WEF_i = g_0 + g_1 SS_i + g_2 GDP_i + g_3 Open_i + x_i$

(6) $SS_i = d_0 + d_0 WEF_i + d_0 tot(V)_i + d_0 GDP_i + n_i$

We estimate this system using the Weighted Last Squares. The Weighted Least Squares method is advisable for estimation of data that consist of country observations (or any other type of observations that can be described as ‘one of the kind’) or for regressions subject to heteroskedasticity.

The results are shown in Table 4 and Table 5. We find broadly the same effect of social spending on competitiveness in comparison to the single equation estimation procedures. Thus, when we take into account the different factors that influence social spending, and when we take into account the simultaneity between competitiveness and social spending, the latter variable continues to

have a significant effect on competitiveness. Again, for both competitiveness indicators, signs of the estimates are the same, while the significance of the social spending variable is observed only for the WEF indicator.

Note that contrary to Rodrik, we do not find that an increase in the volatility of the terms of trade increases social spending. We come back to this problem in the next section where we develop a theoretical model linking risk and social spending.

Table 4: Simultaneous equations estimation (IMD)

Estimation Method: Iterative Weighted Least Squares

Determinant residual covariance: 2007.296

$IMD_i = a_0 + a_1 SS_i + a_2 GDP_i + a_3 Open_i$ Observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.604	7.9304	4.8679	0.0000
social spending	-0.1307	0.2743	-0.4764	0.6371
GDP p.c.	**-0.0006**	0.0002	-2.6878	**0.0115**
Openness 1990-2000	-0.0690	0.0573	-1.2047	0.2374
R-squared	0.3402	Mean dependent var		15.850
Adjusted R-squared	0.2165	S.D. dependent var		9.4581
S.E. of regression	8.3718	Sum squared resid		1121.4
Durbin-Watson stat	2.2554			

$SS_i = b_0 + b_1 IMD_i + b_2 TOT(V)_i + b_3 GDP_i$ Observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.611	6.5293	2.8504	0.0077
Competitiveness	0.0215	0.1613	0.1329	0.8951
TOT Variability	**-2.0344**	0.6774	-3.0032	**0.0052**
GDP p.c. 1997	**0.0005**	0.0002	2.1382	**0.0405**
R-squared	0.3966	Mean dependent var		24.326
Adjusted R-squared	0.2759	S.D. dependent var		6.9617
S.E. of regression	5.9239	Sum squared resid		526.39
Durbin-Watson stat	1.3486			

Table 5: Simultaneous equations estimation (WEF)

Estimation Method: Iterative Weighted Least Squares				
Determinant residual covariance: 1723.873				
$WEF_i = g_0 + g_1\, SS_i + g_2\, GDP_i + g_3\, Open_i$				Observations: 20
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	41.617	7.1175	5.8471	0.0000
social spending	**-0.4809**	0.2462	-1.9536	**0.0598**
GDP p.c.	**-0.0007**	0.0002	-3.5634	**0.0012**
Openness 1990-2000	0.0224	0.0514	0.4357	0.6660
R-squared	0.5058	Mean dependent var		13.449
Adjusted R-squared	0.4131	S.D. dependent var		9.8082
S.E. of regression	7.5138	Sum squared resid		903.32
Durbin-Watson stat	1.7468			
$SS_i = d_0 + d_1\, WEF_i + d_2\, TOT(V)_i + d_3\, GDP_i$				Observations: 19
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	23.208	7.3511	3.1570	0.0035
Competitiveness	-0.1186	0.1809	-0.6556	0.5169
TOT Variability	**-1.7789**	0.7027	-2.5313	**0.0167**
GDP p.c. 1997	0.0003	0.0002	1.2972	0.2041
R-squared	0.4094	Mean dependent var		24.326
Adjusted R-squared	0.2912	S.D. dependent var		6.9617
S.E. of regression	5.8607	Sum squared resid		515.22
Durbin-Watson stat	1.2589			

5. Some theoretical issues

We noted in the previous section that the empirical relation between the terms of trade risk and social spending is not significant, while the relation between the social spending and competitiveness measures is noticeable. In this section we develop a simple theoretical model and we argue that, on theoretical grounds, there is no reason to expect that an increase in terms of trade risk should lead to a reallocation of resources to the social sector. We also show that, if any reallocation occurs, it is likely to be affected by the external effects caused by the social spending and its impact on the productivity in the private sector.

To analyse the relationship between the terms of trade risk, social spending and competitiveness, we use a simple static model. Consider an open economy producing two goods, a private and a public good, with a unit supply of labour,

distributed between the public sector and the private sector. In the context of our discussion here, the public good consists of social services produced by the government, i.e. social security (pension, unemployment insurance, health care, etc.) and other social services (housing, child care, etc.). The revenue of the private sector is affected by a stochastic variable p (representing the terms of trade). p is distributed with mean m_p and variance s_p. The value of total output, expressed in units of the domestic (public) good, is equal to:

(7) $p\, f(1-x)+g(x)$

where x is the amount of labour employed in the public sector, and 1-x is the amount of labour employed in the private sector; $f()$ and $g()$ are the production functions of respectively the private and public goods, where f' and $g' > 0$, and f'' and $g'' < 0$.

We will also analyse a second version of the model in which we allow the public good (social services) to affect the production function of the private sector. The idea here is that the public good increases the productivity of workers in the private sector. Our empirical results confirm that such a positive externality may exist. We have:

(8) $p\, f\left[(1-x), g(x)\right]+g(x)$.

The control variable is the fraction of the total labour resources used in the production of the public good.

The utility function of a representative consumer is separable in the two goods, i.e. the marginal utilities of consuming the private or the public good are independent.

(9) $E\left\{U\left[p\, f(1-x)+g(x)\right]\right\} = E\left\{U_p\left[p\, f(1-x)\right]\right\}+U_g\left[g(x)\right]$.

(10) $E\left\{U\left[p\, f\left[(1-x), g(x)\right]+g(x)\right]\right\} = E\left\{U_p\left[p\, f\left[(1-x), g(x)\right]\right]\right\}+U_g\left[g(x)\right]$.

To find the optimal division of the total labour stock between the two sectors, we have to find x for which the expected utility is maximised. We calculate the first order conditions for both versions of the model.

After rearranging, for model 1 we obtain:

(11) $E\left\{pU'_p\left[p\ f(1-x)\right]\right\} = U'_g\left[g(x)\right]\frac{g'(x)}{f'(1-x)}$.

For model 2 we obtain:

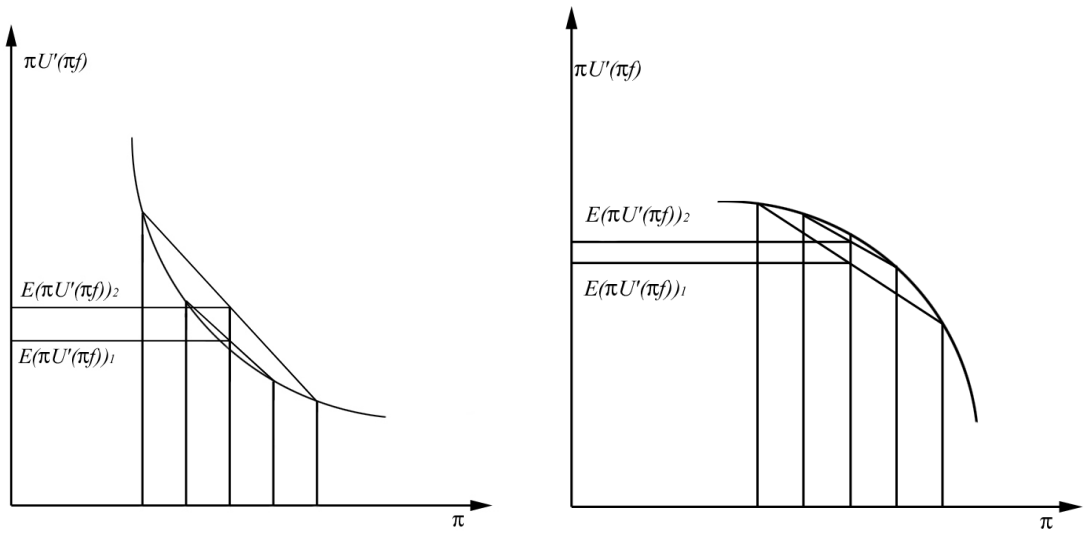
(12) $E\left\{pU'_p\left[p\ f\left[(1-x), g(x)\right]\right]\right\} = U'_g\left[g(x)\right]\frac{g'(x)}{f'(1-x) - f'\left[g(x)\right]g'(x)}$.

'E' stands for expected, and all derivatives are calculated with respect to x. Values of x that satisfy the first order conditions describe the optimal distribution of resources between the private and the public sectors.

Let us now analyse what happens if the distribution of p changes. Assume that there occurs a mean-preserving spread in p (its variance **increases**, while the mean remains constant). This represents an increase in volatility in the terms of trade. The question that arises is whether such a change will move the resources towards the public sector, which is immune to international volatility; or whether it will result in even more labour being employed in the private sector.

In order to answer this question we first analyze how the increase in the mean preserving spread in p affects $pU'_p\,[pf(..)]$ (from the left hand side of equation 11). There are two possible cases, which we show in Figure 5. The first case is when $pU'_p\,[pf(..)]$ is convex in p. It can be seen that in that case, the increase in volatility of p raises the **expected** marginal utility from the private good. The reverse happens when the function is concave in p.

Figure 5: Effects of a mean-preserving spread in p on the expected marginal utility derived from the private good.



From the right hand side of equation (11) we can see that in the convex case a mean preserving spread in p must lead to a decline in x. First of all we have to remember that it leads to an increase in the left-hand-side of the first order condition. Secondly, we notice that a decline in x increases the denominator and reduces the numerator of the right-hand-side of equation (11), and in so doing raises the expression. Thus, in this case (convex function), an increase in risk leads to a decline in resources channelled into the public sector. It can easily be deduced that in the concave case an increase in risk leads more resources to be channelled into the public sector. Thus, an increase in terms of trade risk has an ambiguous effect on the size of public sector.

To determine the concavity or convexity of a function, we have to calculate its second derivative with respect to p. Therefore, we calculate:

$$\frac{d^2}{dp^2}E\left\{pU'_p\left[p\ f\left(1-x\right)\right]\right\} \text{ and } \frac{d^2}{dp^2}E\left\{pU'_p\left[p\ f\left[\left(1-x\right),g\left(x\right)\right]\right]\right\};$$

and check the conditions under which these are **larger** than zero (if the second derivative is larger than zero, then a function is convex with respect to a given variable).

We calculate the second derivative only for the first model, since the derivation is identical for the both of them. The convexity condition can then be written as

follows (we discard the subscript of the utility function, p):

(13) $U'''\left[p\ f(..)\right]p\ f(..)^2 + 2U''\left[p\ f(..)\right] f(..) > 0$

By multiplying both sides by p and dividing by U' (both of them positive) we obtain:

(14) $\frac{U'''\left[p\ f(..)\right]}{U'(..)}p^2 f(..)^2 + \frac{2U''\left[p\ f(..)\right]}{U'(..)}p\ f(..) > 0$.

Some manipulations reveal that:

(15) $R'p - R^2 - R = \frac{U'''(..)}{U'(..)}p^2 f(..)^2$;

where R denotes the relative risk aversion, defined as:

(16) $R = -\frac{U''(..)}{U'(..)}\left[p\ f(..)\right]$;

and where R' is the first derivative of the relative risk aversion.

Using the definition of the relative risk aversion, we can rewrite the convexity condition as:

(17) $-R'p + R(R-1) > 0$.

Let us assume that the relative risk aversion is constant ($R'=0$). The condition is reduced to $R>1$. Therefore, if the representative consumer is sufficiently risk averse, an increase in the volatility of the terms of trade leads to a move of the resources towards the private sector, away from the volatility-proof public sector. However, if the consumers have low risk aversion $R<1$, an increase in the volatility of p will result in more resources employed by the public sector.

These results may appear quite surprising. One intuitively expects that when the private (open) sector becomes riskier (in our case because of the terms of trade risk) it is always better to reallocate resources towards the less risky sector (in our case the domestic public sector). The results of Rodrik (1998) about risk and the size of governments have strengthened this intuition. It is, however, important to realize that economic theory does not allow us to conclude that increased risk in the open sector leads rational agents to desire a retrenchment into the domestic,

less risky sector[4].

The explanation of this counter-intuitive result is that an increase in risk has both a substitution and an income effect. The substitution effect is the one that comes to mind when an increase in risk is seen to lower the attractiveness of risky activities and leads agents to reduce these activities. The income effect, however, works in the opposite direction. When the risk in the open sector increases, the expected total utility of revenues from the open sector declines. This drop can be offset by increasing resources into the open sector. If the income effect dominates the substitution effect, the higher terms of trade risk leads agents to increase their productive efforts in the risky sector.

It follows from the previous discussion that the question of whether an increase in the riskiness of the open sector leads to an expansion of the less risky public sector is an empirical issue.

The next question we analyse is how the presence of the public good externality affects the issue of risk. Put differently, we analyse whether the reallocation of resources, which results from an increase in terms of trade risk, is higher (or lower) when the public good enters the production function of the private sector. It has to be remembered from our empirical analysis that such an externality exists, i.e. social spending increases the efficiency of the private sector contributing towards an increase in competitiveness. Thus, the issue that we analyse here is whether the presence of this effect has any bearing on how the increased risk, which could be an aspect of the globalisation, affects the magnitude of the reallocation of resources.

To start with, we calculate the derivatives with respect to x of the right-hand-sides of equations (11) and (12), which, as will be remembered, represent the first order conditions of models 1 and 2. Next, we compare their absolute values in order to investigate the magnitude of changes in x that are necessary to restore the optimum after an increase in terms of trade risk.

The derivative for the first model is:

[4] *See Newbery and Stiglitz (1981) for the first systematic analysis of this proposition. See also De Grauwe (1988) who applied it to the problem of the exporter who faces increased exchange risk.*

$$(18)\ \frac{g''(x)f'(1-x)}{[f'(1-x)]^2}+\frac{g'(x)f''(1-x)}{[f'(1-x)]^2}<0\,.$$

This derivative is negative since both *f'(..)* and *g'(..)*, are positive, and *f''(..)* and *g''(..)* are negative.

In the next step, we calculate the derivative for the second model. This yields:

$$(19)\ \frac{g''(x)(\Delta)}{\Delta^2}-\frac{g'(x)\left[-f''(1-x)-f''[.][g'(x)]^2-f'[.]g''(x)\right]}{\Delta^2};$$

where $f'(1-x)-f'[(g(x)]g'(x)=\Delta$.

It is reasonable to assume that $D>0$, because the strength of the direct effect of changes in x is most likely larger than the strength of the indirect effect *f'[g(x)]g'(x)*, occurring through changes in the public good.

Rearranging yields:

$$(20)\ \frac{g''(x)(\Delta)}{\Delta^2}+\frac{g'(x)f''(1-x)}{\Delta^2}+\frac{g'(x)\left[f''[.][g'(x)]^2+f'[.]g''(x)\right]}{\Delta^2}<0\,;$$

where *f'[.]=f'[g(x)]* and *f''[.]=f''[g(x)]*.

By comparing equations (20) with (19) it can easily be seen that (20) is larger in absolute value than (19). Put differently – in order to produce a given change in the expected utility of the private output – the left hand sides of equations (11) and (12) – a smaller reallocation of labour is necessary after an increase in the terms-of-trade risk.

This result has an important implication for our discussion of the effects of an increase in the riskiness of the open sector. Suppose again that the riskiness of the open sector increases and that $R<1$. In such a case resources will be reallocated towards the closed, public sector. In the second model, where we take into account that the production of the public good has a positive effect on private output, this reallocation of labour towards the public sector will be less pronounced than in the model where the public good does not raise private output.

A similar conclusion holds when $R>1$. In that case an increase in risk leads to a reallocation of labour towards the open, private sector. Again, in the model where the public good increases private output, this reallocation will be less pronounced

than in the model without this externality.

More generally, when the risk in the private (open) sector increases, the existence of public goods, which positively affect private production, leads to a lesser need to reallocate resources from one sector to the other. To the extent that a reallocation of resources is costly, the existence of public goods, which increase the productivity of the private sector, makes the adjustment to the increased risk easier.

In the context of our empirical results this could mean that countries that have invested a lot in social services and thus have improved their competitiveness, are better shielded from externally generated risk. When due to say, globalisation, the externally generated risk increases, in these countries there is a lower need to reallocate resources, which can be both costly and welfare-decreasing.

6. Conclusions and policy implications

In the light of the claims of the anti-globalists, our empirical results are surprising. We find no evidence of a race to the bottom concerning social security in the industrialised world. On the contrary – we find that the **rich** countries that **spend most on social needs** rank highest, on average, in terms of competitiveness. Thus, social spending does not seem to hinder countries in their continuous battle for competitiveness. On the contrary, high social spending goes together with strong competitiveness. How can these surprising results be explained?

There are two possible explanations – each one assuming a different direction in the causal relation between social spending and competitiveness. The first explanation lays the causality from competitiveness to social spending. It runs as follows. Countries that are highly competitive generate extra income. The latter in turn leads to a higher demand for social insurance which in democratic societies will lead governments to provide it. In this sense, strong competitiveness rewards nations to pay for more generous social services.

We have taken care of this objection, first by relating the average competitiveness index during 1998-2002 or 1999-2001 to social spending preceding this period. By using this specification we have, in principle, excluded the causality going from competitiveness to social spending. Second, since in a cross-section there could be a residual reverse causation between competitiveness and social spending, we

have used a simultaneous equations estimation procedure that corrects for the potential bias arising from reverse causation.

A second explanation identifies the causality to go from social spending towards competitiveness. We argued that the competitiveness of a nation depends on the absence of prolonged social conflicts, the quality of government and domestic institutions, as well as the quality of human capital. It can be argued that the human capital of a nation is improved by a well-functioning system of social services. Such a system makes it possible for the workers to feel less insecure, and gives them a feeling of belonging to the system. Such a sense of belonging leads to stable societies with a strong sense of cohesion. In addition, a well-functioning system of social services may lead people to be willing to take more risk in starting new risky projects, knowing that failure will not condemn them to poverty. In short, a well-functioning social system creates a 'risk-taking social capital' that ultimately leads to an improvement of the productivity of a nation.

In addition, as pointed out by political scientists, a degree of complementarity between markets and governments is necessary for achieving and sustaining a relatively conflict-free society. The latter is essential to be competitive. Thus, our results suggest that when countries invest in social services they also develop institutions capable of generating conflict-free societies. This then creates the necessary condition for achieving high levels of competitiveness. Thus countries with well-developed social service systems have little to fear from the "race-to-the-bottom" danger.

Finally we interpreted our findings in the framework of a theoretical model in which risk affects the size of the social sector and in which social spending affects the production function of the private sector. We concluded that countries that have invested a lot in social services and thus have improved their competitiveness, are better shielded from externally generated risk. In these countries there is a lower need to reallocate resources when due to, say, globalisation, the externally generated risk increases. Our theoretical analysis also allows us to conclude that increased terms of trade risk does not necessarily lead to an increase in the demand for social security. This theoretical ambiguity may explain why it is difficult to find a robust relationship between external risk and the size of the social sector.

More research will have to be done to detect the nature of the causality between

competitiveness and social spending. It will be important to analyse the conditions under which social spending leads to increased competitiveness. One channel seems obvious – the efficiency with which governments provide social services. In countries where governments are efficient, the taxes paid by employers and employees are transformed into social services whose value exceeds the value of these taxes. In such countries workers and employers will feel satisfied and it will be likely that productivity is positively affected. Conversely, in countries with inefficient governments the taxes are transformed into social services with low value. As a result, frustration and lack of motivation will be the result. Thus, the key is an efficient government, capable of transforming social security contributions into social value added. The countries that manage to organise such a transformation successfully are likely to gain in terms of competitiveness.

Our analysis leads to an interesting insight into the link between globalisation and governance. Globalisation puts pressure on nations to be competitive. According to our results, one way governments can improve competitiveness of the nation is to improve the efficiency of government institutions. Such an improvement allows taxpayers' money to be transformed into valuable collective services, which in turn improve the productivity and the competitiveness of the nation, and make the country better able to absorb externally generated risk. In a way globalisation works like Adam Smith's invisible hand. It forces governments to be efficient, even if they do not like this[5]. Those who succeed improve the competitiveness of their country and are rewarded by more welfare for their citizens; those who fail reduce productivity and competitiveness, and are punished by less welfare for their citizens. In this sense, globalisation can force governments to be more responsible to the needs of their citizens.

[5] *In a recent paper Bonaglia, de Macedo, and Bussolo (2001) show that increases in import openness reduce government corruption and improve government governance.*

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Appendix

IMD – The Breakdown of Competitiveness Factors

Economic Performance	Government Efficiency	Business Efficiency	Infrastructure
Domestic Economy	Public Finance	Productivity	Basic Infrastructure
International Trade	Fiscal Policy	Labour Market	Technological Infrastructure
International Investment	Institutional Framework	Finance	Scientific Infrastructure
Employment	Business Legislation	Management Practices	Health and Environment
Prices	Education	Impact of Globalization	Value System

Competitiveness Input Factors:

1. Economic Performance (74 criteria): Macro-economic evaluation of the domestic economy.
2. Government Efficiency (84 criteria): Extent to which government policies are conducive to competitiveness.
3. Business Efficiency (66 criteria): Extent to which enterprises are performing in an innovative, profitable and responsible manner.
4. Infrastructure (90 criteria): Extent to which basic, technological, scientific and human resources meet the needs of business.

Rankings by IMD: overall, domestic economic performance, government efficiency

	Overall						Domestic economic performance						Government efficiency					
	02	**01**	**00**	**99**	**98**	**mean**	**02**	**01**	**00**	**99**	**98**	**mean**	**02**	**01**	**00**	**99**	**98**	**mean**
Australia	14	11	10	11	12	11.6	27	28	24	20	17	23.2	9	5	6	6	7	7
Austria	13	14	15	18	24	16.8	16	27	18	17	19	19.4	15	11	15	14	17	14
Belgium	18	17	19	21	23	19.6	5	10	12	12	10	9.8	29	25	25	27	34	28
Canada	8	9	8	10	8	8.6	14	12	11	11	11	11.8	10	10	12	15	13	12
Denmark	6	15	13	9	10	10.6	12	32	31	37	25	27.4	8	13	11	11	12	11
Finland	2	3	4	5	6	4	18	33	22	23	20	23.2	2	2	2	3	10	4
France	22	25	22	23	22	22.8	8	11	9	8	14	10	32	34	27	30	28	30
Germany	15	12	11	12	15	13	4	5	4	3	6	4.4	26	18	22	21	21	22
Greece	36	30	34	32	33	33	38	39	38	31	28	34.8	40	33	35	36	44	38
Iceland	12	13	9	13	18	13	43	42	37	35	41	39.6	11	9	9	17	18	13
Ireland	10	7	5	8	7	7.4	10	6	3	10	9	7.6	5	3	5	9	3	5
Italy	32	32	32	30	31	31.4	21	25	16	16	21	19.8	39	40	43	40	38	40
Japan	30	26	24	24	20	24.8	29	16	17	13	5	16	31	29	28	29	33	30
Luxembourg	3	4	6	3	3	3.8	2	2	2	2	2	2	7	7	10	4	6	7
Netherlands	4	5	3	4	4	4	9	8	6	6	7	7.2	12	12	4	7	8	9
New Zealand	19	21	18	17	17	18.4	26	34	28	34	37	31.8	16	17	13	8	4	12
Norway	17	20	17	16	11	16.2	30	26	33	25	18	26.4	18	23	16	18	9	17
Portugal	33	34	29	27	29	30.4	28	35	20	14	31	25.6	34	32	26	25	26	29
Spain	23	23	23	20	26	23	13	22	21	22	27	21	20	21	20	12	22	19
Sweden	11	8	14	14	16	12.6	17	17	19	15	26	18.8	14	14	19	24	23	19
Switzerland	7	10	7	7	9	8	11	14	14	9	12	12	6	6	7	5	11	7
Turkey	46	44	42	38	39	41.8	49	49	47	46	46	47.4	46	49	40	39	39	43
UK	16	19	16	19	13	16.6	6	9	7	5	8	7	22	24	17	20	16	20
USA	1	1	1	1	1	1	1	1	1	1	1	1	3	8	8	10	5	7
Correlation with overall ranking							0.65	0.58	0.56	0.45	0.63	0.59	0.93	0.93	0.92	0.88	0.86	1

Rankings by IMD: Infrastructure, business efficiency

	Infrastructure						Business efficiency					
	02	**01**	**00**	**99**	**98**	**mean**	**02**	**01**	**00**	**99**	**98**	**mean**
Australia	12	6	8	11	9	9	15	14	14	14	18	15
Austria	10	11	14	19	23	15	12	12	17	23	25	18
Belgium	18	18	20	21	21	20	20	18	18	18	21	19
Canada	6	8	10	9	4	7	5	11	9	11	7	9
Denmark	8	13	11	8	5	9	6	9	8	4	4	6
Finland	2	2	2	2	3	2	3	2	3	3	2	3
France	19	22	22	22	19	21	26	24	22	24	20	23
Germany	11	10	9	10	15	11	21	15	15	20	22	19
Greece	33	26	31	30	26	29	32	26	29	26	34	29
Iceland	4	4	4	4	8	5	4	4	5	8	9	6
Ireland	23	15	16	20	13	17	8	7	4	9	6	7
Italy	31	28	30	27	28	29	29	27	30	27	30	29
Japan	16	19	15	14	17	16	35	30	26	32	29	30
Luxembourg	13	12	12	12	14	13	7	6	7	5	8	7
Netherlands	9	7	5	6	7	7	2	3	2	2	3	2
New Zealand	15	21	19	18	18	18	22	22	23	16	16	20
Norway	14	20	13	15	10	14	19	20	16	13	12	16
Portugal	29	33	27	26	27	28	36	35	36	33	37	35
Spain	25	25	24	23	25	24	24	23	24	22	24	23
Sweden	3	3	7	7	11	6	10	5	12	17	14	12
Switzerland	5	9	6	5	6	6	14	13	11	15	13	13
Turkey	39	35	33	31	31	34	41	33	32	30	26	32
UK	21	23	23	24	22	23	17	21	19	21	15	19
USA	1	1	1	1	1	1	1	1	1	1	1	1
	0.87	0.92	0.9	0.86	0.88	1	0.95	0.94	0.94	0.89	0.88	1

Ranking by WEF

	01	00	99	mean
Australia	9	10	13	10.67
Austria	13	13	11	12.33
Belgium	14	12	15	13.67
Canada	11	11	8	10.00
Denmark	8	6	7	7.00
Finland	1	1	2	1.33
France	12	15	9	12.00
Germany	4	3	6	4.33
Greece	43	33	36	37.33
Iceland	16	17	22	18.33
Ireland	22	22	17	20.33
Italy	24	24	25	24.33
Japan	15	14	14	14.33
Netherlands	3	4	3	3.33
New Zealand	20	19	16	18.33
Norway	19	20	18	19.00
Portugal	31	28	29	29.33
Spain	23	23	23	23.00
Sweden	6	7	4	5.67
Switzerland	5	5	5	5.00
Turkey	33	29	31	31.00
UK	7	8	10	8.33
USA	2	2	1	1.67

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