

## Alternative Measures of Well-being

By Romina Boarini, Åsa Johansson and Marco Mira d'Ercole

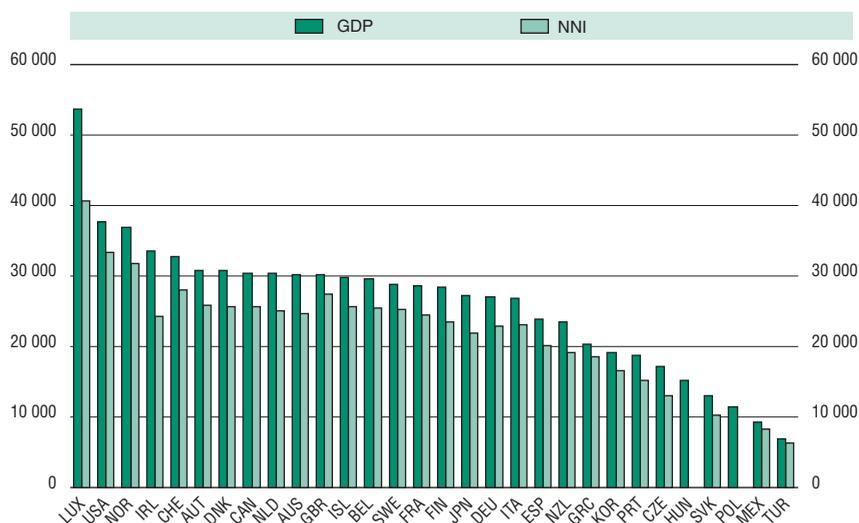
The OECD, in common with many other organisations, has normally measured material living standards in member countries in terms of the level and growth of gross domestic product (GDP). But clearly, policy makers do not focus single-mindedly on GDP. They rather seek to enhance the overall well-being of citizens, today and in the future, taking into account other factors such as distributional concerns and environmental quality. This *Statistics Brief*<sup>1</sup> reviews the various potential components of well-being, and assesses whether measures of economic growth can serve as adequate proxies for the development and level of well-being in OECD countries.

“Well-being” is a complex concept. Dictionary definitions differ, but notions of prosperity, health and happiness generally figure. Well-being is not something that one can give a precise number to. Numerical indicators relevant to measuring the different components of well-being exist, and it is plausible to argue that the general well-being of society as a whole has risen or fallen if a set of indicators move in a given direction. However, when these different indicators move in opposite directions, it is not possible to say if well-being is being enhanced or reduced unless all indicators are expressed in a common metric.

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Figure 1. **Gross Domestic Product and Net National Income per capita, 2003**  
(US\$ current prices and PPPs)



Source: OECD, *National Accounts of OECD Countries, 2005*.

1. The background analysis is reported in R. Boarini, A. Johansson and M. Mira d'Ercole, «Alternative measures of well-being», OECD Economics Department Working Papers No. 476 and Social, Employment and Migration Working Papers No. 33, Paris, 2006.

This *Statistics Brief* reviews different approaches to the measurement of well-being. It first looks at monetary measures: these include both measures directly available in the national accounts for the economy as a whole or for households and those that try to capture the influence of other components of well-being (such as leisure time and income distribution) in money terms. It then looks at various *non-monetary* measures (such as indicators of social conditions and environmental quality) and at surveys of self-reported happiness and life-satisfaction.

## Monetary measures of well-being

### GDP and other national accounts indicators

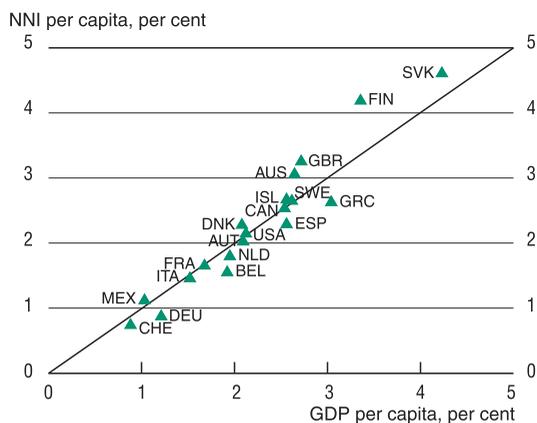
Economists often assess well-being through measures of GDP per capita. Within the national account framework, however, better measures of material living standards than GDP per capita exist, even if data availability and reliability restrict the scope for cross-country and inter-temporal comparisons. One such measure is *national income*. While GDP is a production concept, the way that it is constructed makes it equal to the total income earned in the production process. Some of this income is paid to non-residents, while residents receive some income from production in other countries. GDP can be adjusted for “net income from abroad” to arrive at the concept of gross national income, GNI, which is more relevant for the well-being of residents of a country.

GDP also makes no allowance for the using up of capital goods during the production process and thereby overestimates the value of output that contributes to well-being. An allowance for depreciation of capital can be subtracted from GDP and GNI to arrive at the corresponding net concepts of NDP and NNI. While all countries provide estimates of capital depreciation, it is known that they are difficult to derive accurately.

Data for GDP, NDP, GNI and NNI are collected in terms of the local currency used by the country. International comparisons can be made by converting the data to a common currency, usually the US dollar, using either exchange rates or purchasing power parities (PPPs), but the latter are much preferred for making comparisons of this nature.<sup>2</sup> For the majority of countries there is little difference between NNI and GDP per capita relativities, although there are exceptions, most notably Ireland and Luxembourg. Growth rates of the two measures are also similar for most countries.

Even per capita NNI is a poor approximation of the economic resources actually enjoyed by individuals and households. A better measure is the per capita income from all sources available to households after they have paid taxes, and how much of it they consume, including goods and services that they receive free of charge from the government and non-profit institutions. For all countries household disposable income per person is lower than per capita GDP, and per capita household consumption levels are generally lower still. But cross-country comparisons show that there is a reasonably close correspondence between household incomes, their consumption, and GDP per capita. On the other hand, household incomes and consumption have in general risen less quickly than GDP in most countries in the past decade, mostly reflecting a shift towards higher company profits. As households are the ultimate owners of companies, a faster growth of business income should increase household well-being (through higher asset values) but this effect is not taken into account in national accounts measures of income flows.

Figure 2. Growth of per capita Gross Domestic Product and Net National Income, 1994-2003  
(Annual average growth rate)



Source: OECD, *National Accounts of OECD Countries*, 2005.

### Accounting for other components of well-being within a monetary framework

The determinants of individual and societal well-being go obviously beyond production and consumption of economic resources. As a result, several approaches have been explored to extend national account aggregates to a

2. See the March 2002 edition of the *Statistics Brief Purchasing Power Parities – Measurement and Uses*.

range of other dimensions that have value for individuals and communities. While monetary valuation of non-market factors requires some problematic assumptions, illustrative calculations highlight the potential importance of some of these factors.<sup>3</sup>

#### Leisure time

There is no doubt that for most people longer holidays and shorter working hours contribute to well-being as long as they are not accompanied by lower incomes (Beckerman, 1978). Leisure in this sense is a “good”, but it is not sold on markets and therefore (as many other non-market factors) does not enter into the national accounts. While there are no direct measures of the quantity of leisure time enjoyed by OECD citizens, there are big differences between countries in the hours of paid work performed each year, and these differences have themselves changed over time. Workers in the United States, one of the countries with the highest per capita GDP, work many hours each year, surpassed only by a few other OECD countries.<sup>4</sup> Hence ascribing monetary value to leisure, however arbitrarily, adds something to well-being above and beyond the value of money income in all countries. While the ranking of countries on this adjusted measure is not so very different from that based on per capita GDP, the growth rates of these two measures differ more significantly for several countries. In general, average annual growth rates are boosted, particularly so for Denmark, France, the Netherlands and Portugal (Boarini *et al.*, 2006).

#### Household size

All estimates of per capita income are obtained by summing income across all units and dividing the total among the resident population. This ignores the pooling of resources that occurs within each household and that fact that these have different sizes, often containing individuals with no independent income (e.g. children and spouses). It is possible to adjust per capita income for household size using data from household surveys. Most analyses of well-being based on household-level data rest on the

3. A comprehensive approach to the construction of non-market accounts in the fields of home production, human capital, the environment, health and education, government and the non-profit sector is described in Abraham and Mackie (2005), which summarises the conclusions of a panel of the National Research Council for the United States.

4. A more important explanation for cross-country variations in average annual hours worked per person of working age is differences in labour mobilisation, namely the proportion of the working-age population (conventionally aged between 16 and 65) actually working. Again, the United States is well above average, significantly surpassed by only a few countries.

assumption that the economic needs of households rise less than their size: a household comprising one couple and two children does not need twice the income of a childless couple to maintain the same level of well-being. While the adjustment is bound to be somewhat arbitrary, assuming some “sharing” of resources within households is clearly preferable than the alternative. Correcting per capita income data for the decline in household size that occurred in all OECD countries over the past decades implies a lower growth in «equivalised» income (*i.e.* income adjusted for household size) than in income per capita. Since 1995 Mexico, the Czech Republic and Portugal are among those countries where the reduction is greatest (Boarini *et al.* 2006).

#### Income distribution

Incomes also vary between individuals, and OECD countries differ in the degree of inequality and in how these have changed over time. It is not possible to say *a priori* what impact income inequality has on well-being. If it is assumed that extra income brings smaller and smaller increments in well-being to individuals and that all individuals with the same income experience the same well-being, then general well-being will be highest if all individuals have the same income; a corollary would be that any increase in income inequality with no increase in average income reduces well-being. But it can also be argued that the possibility of becoming rich is needed to spur effort and innovation, which benefit society as a whole, and that individuals differ in their preferences for leisure as opposed to material goods.

It is possible to adjust national account measures of household income per capita to incorporate distributional concerns. One such adjustment involves weighting average incomes in each decile of the distribution with a coefficient representing the degree of aversion to inequality of each society, where a higher value of this coefficient implies that lower weight is given to higher incomes (Kolm, 1969). Unsurprisingly, a high value for this coefficient can lead to a change in country rankings and affect country growth rates (Boarini *et al.*, 2006).

### Non-monetary measures of well-being

A complementary approach to assessing well-being is to look at indicators providing information on some of its specific components. One avenue is to look at whether OECD countries with higher GDP per capita (and faster growth of GDP per capita over time) experienced a better (or more rapid) improvement in social conditions. Another strand is to look at the relation between GDP and indicators

of environmental conditions. Finally, we can consider how people answer questions about their happiness and how these are related to money income.

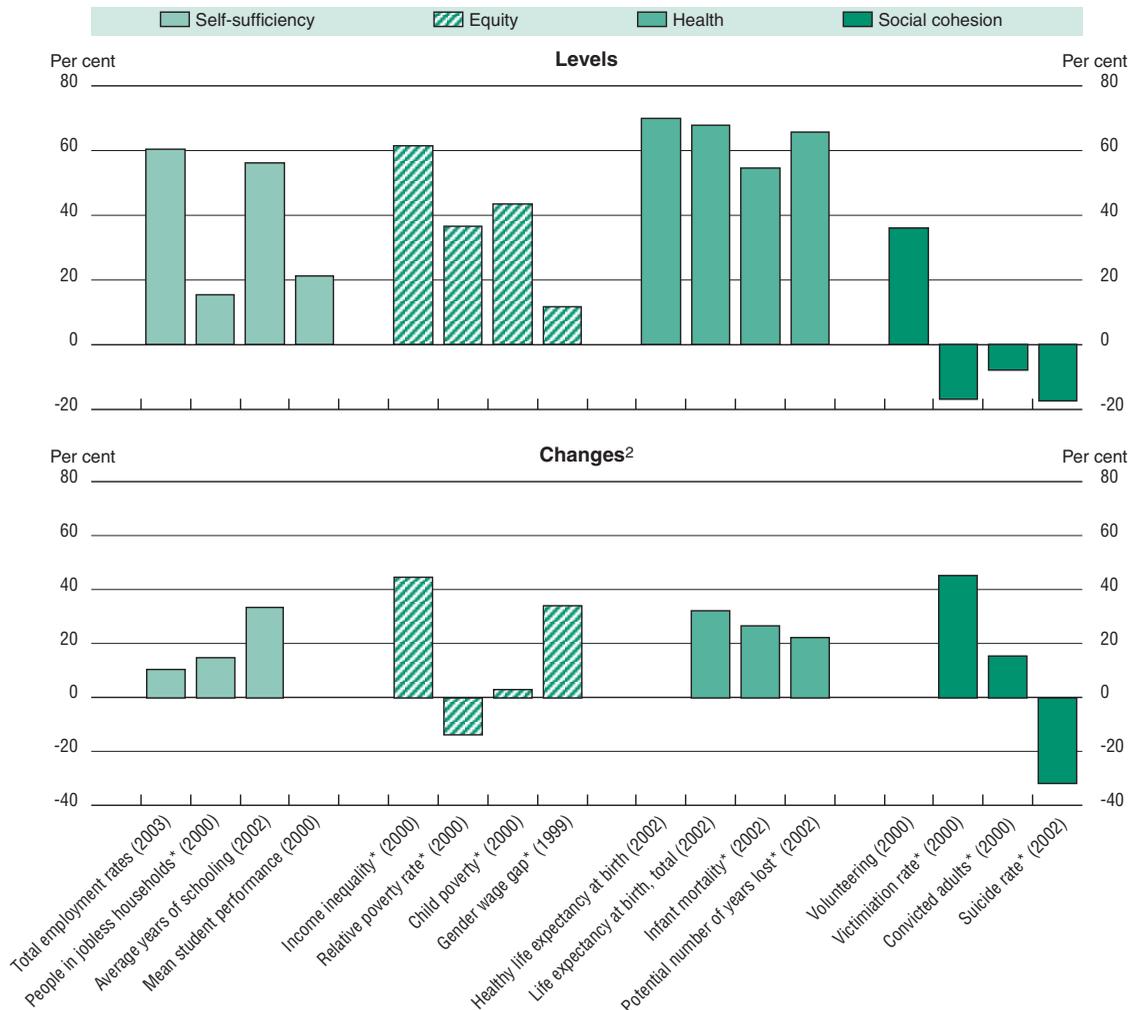
### Social indicators of well-being

Social factors — such as self-sufficiency, equity, health, and social cohesion — enter into well-being. Building on the OECD experience in collecting various types of

social indicators (OECD, 2005), Figure 3 shows cross-country correlations between a selection of these social indicators and GDP per capita in both levels and changes over time:

*Self-sufficiency* is measured in terms of the overall employment rate, the proportion of the population in households where nobody has a job, the average number of years of schooling, and the average performance of

Figure 3. Cross-country correlations between per capita GDP and different social indicators in OECD countries<sup>1</sup>



1. For variables where higher values of the indicators denote worse social outcomes (e.g. infant mortality, prisoners, denoted with an “\*”) correlations with per capita income are shown with the opposite sign (e.g. countries with higher per capita income have lower infant mortality rate – shown with a positive sign – and higher rates of imprisonment – shown with a negative sign). Per capita income is measured as GDP in current prices and purchasing power parities, divided by the total population. Correlations are computed between values of the GDP per capita and of the social indicators in the same period; the number of countries considered may vary among different pairs of variables depending on data availability.

2. Changes between the first half of the 1980s to around 2000. For the exact period for each indicator, see Boarini *et al.* (2006). Lack of data prevents the computation of changes over time for some of the indicators.

Source: OECD; *Society at a Glance* and Boarini *et al.* (2006).

schoolchildren at age 15. All these factors affect the ability of individuals to earn a decent living. Not surprisingly, employment rates and average years of schooling are strongly correlated with GDP per capita, but this is not the case for measures of student performance and of jobless households. The correlation between changes in self-sufficiency measures and GDP per capita are more tenuous.

Measures of *equity* include income inequality, relative poverty rates, child poverty and the gender wage gap. In general, high GDP per capita is associated with more equitable outcomes as measured by these indicators, though the correlation is weak in the case of the gender wage gap. An increase in GDP per capita goes hand in hand with reduced income inequality and gender wage gaps, but is very weakly, if at all, related to changes in child and relative poverty.

Key indicators of *health conditions* comprise life expectancy at birth, “healthy” life expectancy at birth (*i.e.* lifespan without disabling medical conditions), infant mortality rates, and potential years of life lost as a result of accidents or preventable diseases. All of these measures are strongly correlated with GDP per capita across countries (*i.e.* higher incomes go hand in hand with better health, at least on average) but the association is weaker for changes in GDP per capita and changes in health indicators.

A feeling of belonging to a group or a wider community contributes positively to well-being, whereas high levels of criminality, marginalisation and personal failure must reduce it. Indicators of *social cohesion* in the positive sense, for example participation in community activities, are associated with higher levels of per capita income. Negative indicators (such as victimization, incarceration and suicides) bear no relationship to GDP.

Overall, with the exception of social cohesion measures, the association between social conditions and the level of GDP per capita is positive but it is not strong (below 0.60, on average) and declines further when limiting the analysis to OECD countries with higher per capita income. As a result, experimental measures that aggregate these sixteen social indicators into a synthetic index<sup>5</sup> lead to some significant differences in the ranking of some OECD countries relative to a ranking based on GDP per capita alone that do not change very much when the weights are varied (Boarini *et. al* 2006). Further, the correlations

5. Practical guidance on the construction of composite indicators is provided by Hoffman *et al.* (2005).

between changes in GDP per capita and various social outcomes are generally insignificant (Boarini *et al.*, 2006).

### ***Well-being and the environment***

The state of the environment affects people’s well-being. Low environmental quality (such as air and water pollution) can result in health problems, and some forms of pollution can reduce the amenity value of the natural habitat. And even if current environmental conditions may not have noticeable effects at present, they may have serious consequences for future generations, and hence on the well-being of those living today who are concerned about living standards of people yet to be born. The concern over climate change is an example of such inter-temporal concerns.

The relationship between the state of the environment and per capita GDP is complex. Higher levels of output stress the environment more, but also raise the capacity of societies to mitigate and deal with these stresses. In the past 10-15 years, emissions of most pollutants have grown more slowly than GDP in most OECD countries. The tonnages of traditional pollutants loosed into the air and into water systems have actually fallen in most member countries. In addition, greenhouse gas emissions have fallen in absolute terms in about half of all OECD countries – although they are continuing to accumulate in the atmosphere. There has been less success in managing in a sustainable manner renewable natural resources – as it is the case for several important fish stocks.

Although there are no standard accounts available that adjust GDP for changes in the state of the environment,<sup>6</sup> some of the improvements discussed above suggest that environmental degradation may have become less of a drag on how well-being is changing over time since the early 1990s in most member countries. However, this would not necessarily be the case if the cost of emissions and discharges has become higher with time as concentrations of pollutants and emitted substances continue to increase, as might be the case for greenhouse gasses.

### ***Well-being and happiness***

Instead of attempting to evaluate well-being on the basis of objective indicators, it is possible to use subjective

6. Practical steps to better integrate physical measures of environmental stress within national accounts are described in the 2003 *Handbook of Integrated Environmental and Economic Accounts* (SEEA). However, such satellite accounts are not widely used in OECD countries.

measures for the same purpose. One way of determining whether persons are happy and satisfied with their life (or not) is to ask them.<sup>7</sup> Surveys exist for some countries for many years and they are now widely available, for example the “World Values Surveys.” A representative sample of people in each country is asked to check the response that best describes them, from very happy/satisfied with their life to very unhappy/dissatisfied with their life. The results seem to be reliable, in that individuals self-reporting high levels of happiness and satisfaction are also seen in that light by their friends and relatives, are more resilient to stress, are more likely to recall positive events in their lives, smile more, live longer and are less likely to suffer from depression or lose their jobs (Layard, 2005).

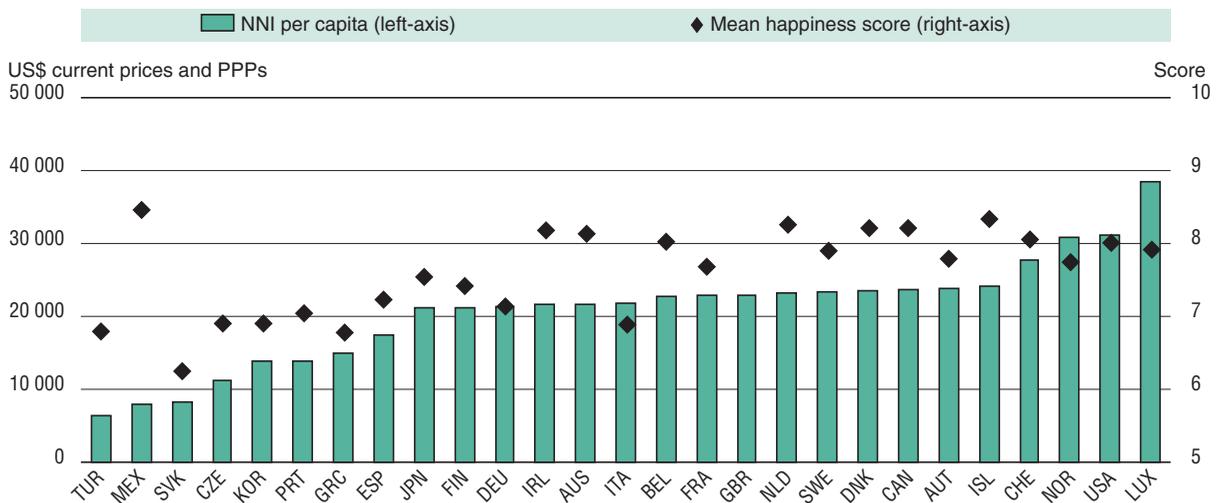
A striking feature of the survey results is that most people in OECD countries rate themselves as being fairly to very happy and satisfied with their lives almost irrespective of their income levels. In around two thirds of OECD countries, close to 90% of the people sampled claim to be very or fairly happy with their lives (Figure 4). There is a tendency for the richer OECD countries to report higher levels of life satisfaction, but the relation is weak and seems to flatten out at higher income levels. The five countries with the lowest happiness scores also have lower than average per capita incomes, but Mexicans report high levels of happiness, and several rich OECD countries report lower than average scores.

Another relevant finding from these surveys is that as individuals become better off during their lifetimes, as most people do, their self-reported satisfaction does not rise proportionately (in fact they change very little for most of the samples), while those who become worse off report decreased happiness levels. It may be that people *adapt* to higher income and consumption, or that individual well-being depends strongly on how they *compare* to friends, relatives and colleagues. This could explain why the link between happiness scores and GDP per capita is rather tenuous. Apart from income, empirical studies find that happiness scores are higher for individuals having a job, with stronger family ties and with better health and education, as well as in countries where the quality of institutions is perceived to be higher and (among European countries) income inequality is lower.

## Summary and conclusions

Well-being has several dimensions of which money income is only one. It is nevertheless an important one, since richer economies are better placed to create and maintain other well-being-enhancing conditions, such as a clean environment, the likelihood that the average person will have a right to 10 years or more of education, and lead a comparatively long and healthy life. An increase in GDP per capita may also contribute to maintain a pluralistic democratic society, with conflicting claims on total

Figure 4. Net National Income per capita and Mean Happiness Score, 2000<sup>1</sup>



1. Countries are ranked in ascending order of net national income per capita.

Source: OECD, *National Accounts of OECD Countries* and *World Values Survey*, 1999-2001.

7. There are of course circumstances where the increased happiness of some individuals necessitates the reduced happiness of others – the “rejoicing at others’ misfortune” syndrome.

economy resources easier to solve in a growing than in a stagnating or shrinking economy (see e.g. Friedman, 2005).

The question of which national accounts measure to use as an indicator of well-being is not difficult to settle. Those that have been proposed in this *Brief* are generally highly correlated with each other but, in general, the more they are focused on well-being (for example households' consumption of goods and services, adjusted for the size of the household), the more difficult it is to get non-contentious data series that are widely available across countries and over time.

There is no doubt that whatever monetary measure is chosen, its relationship to well-being will be neither monotonic nor precise. As a result, any comprehensive assessment of well-being cannot rely on GDP or other monetary measures *alone*. These need to be complemented with other indicators pertaining to social and environmental conditions as those described in this *Statistics Brief*. Measure of the quality of government will also be relevant to that assessment, as well-being will be increased by institutions that enable citizens to control their own lives and to give them the feeling that investment of their time and resources will be rewarded. While the measurement difficulties are daunting, the OECD and its member countries are well placed to advance this agenda and produce more relevant statistics.<sup>8</sup> ■

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8. To this end, the OECD and the Centre for Research on Lifelong Learning (CRELL) are hosting a workshop on “Measuring Well-Being and Societal Progress” from 19-21 June 2006 at the University Cattolica in Milan – see OECD World Forum on Statistics, Knowledge and Policy website ([www.oecd.org/oecdworldforum](http://www.oecd.org/oecdworldforum)).

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