

## SECTOR IN-DEPTH

6 March 2018

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## Income Inequality - Advanced Economies

# Rising income inequality related to weaker sovereign institutional strength

Income inequality has risen across many advanced economies in recent years, and is widely accepted as one of the forces that have fueled populist political movements across Europe. Cyclical factors such as rising unemployment rates have contributed to an increase in income inequality, as the drop in income during the last recession was larger for households at the bottom of the income distribution than for those at the top. In addition, a study by the European Parliament has identified capital income as an explanation of rising inequality.<sup>1</sup>

Rising income inequality can have negative implications for sovereign credit quality by encouraging corruption or law-breaking and weakening government institutions. It correlates with several factors that form our assessment of a country's institutional strength, which is one of the four key rating factors in our sovereign bond rating methodology. Data from 1995-2015 show a negative correlation between income inequality and three measures of institutional strength: the rule of law, control of corruption and government effectiveness. While correlation does not necessarily imply causation, and other factors are likely to have a material impact on sovereign institutional strength, this correlation suggests that a rise in income inequality, all else being equal, is credit negative for sovereign issuers.

However, while this relationship is significant, any effect is also likely to be very small. Our estimates suggest that a worsening of inequality from the euro area median level to the average of the three countries with the highest degree of inequality could weigh on institutional strength, but only slightly.

## Income inequality has generally worsened in advanced economies since 2000

Rising income inequality is widely accepted as one of the forces that have fueled populist political movements across advanced economies. Cyclical factors, such as rising unemployment rates, have contributed to an increase in income inequality, as the drop in income during the last recession was larger for households at the bottom of the income distribution than for those at the top. In addition, a study by the European Parliament has identified capital income as an explanation of rising inequality in the euro area.<sup>2</sup>

Income inequality has generally worsened in most advanced economies since 2000, especially in the US and some euro area countries. The Gini coefficient, a common measure of inequality derived from the Lorenz curve,<sup>3</sup> which in turn captures the distribution of national income shares in relation to population shares, has picked up by more than 3% in some countries. In contrast, income inequality has remained broadly stable in Canada, based on the same data.

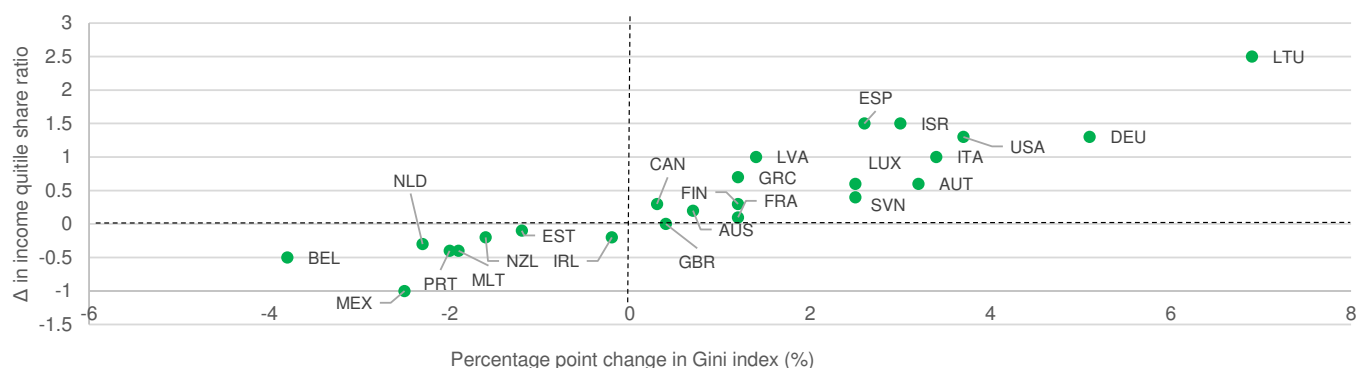
In the euro area, while nominal household disposable income per capita has increased by 47% in total since 2000 — an annualised rate of 2.4% — the income distribution has become more unequal. This is shown by the income quintile share ratio, which divides the total income received by the top 20% of the population in a country by that of the bottom 20%. The ratio rose to more than 5.0 in 2015 from 4.6 in 2000. Further, the average Gini coefficient in the euro area has also increased modestly to 30.3 from 29.4.

However, the broad trend toward widening income inequality masks the considerable heterogeneity in the region. In a few countries, such as Belgium, Portugal and the Netherlands, the income distribution has narrowed slightly, as captured by reductions in both the income quintile share ratio and the Gini coefficient for those countries. In many others, including Lithuania, Spain, Germany and Italy, income inequality has widened substantially.

Exhibit 1

### Evolution of income inequality in advanced economies and other countries, 2000-15

The change of income quintile share and Gini coefficients



Note: For US, Australia, Israel, Mexico, New Zealand and Korea, there were no data available for 2015, so latest data points are used. Exhibit plots changes in inequality metrics from 2000 to 2015.

Sources: Eurostat, The Organization for Economic Co-operation and Development

## Income inequality is negatively correlated with institutional strength

Past economic research has identified linkages between increases in income inequality and weaker institutional frameworks and effectiveness in society. Some research suggests that the wealthiest individuals have greater motivation and opportunity to engage in corruption,<sup>4</sup> and that the poor are more vulnerable to fraud and lack resources to monitor corrupt actions.<sup>5</sup> Similarly, previous research has shown that greater inequality provides the wealthy with more opportunity to use their economic power, while the poor may be also more willing to break the law in such an environment.<sup>6</sup> A more equal distribution of income can be correlated with well-functioning institutions.<sup>7</sup> In contrast, poor institutional quality, which indicates the weakening of government's capacity to conduct sound economic policies and foster growth, can exacerbate the degree of inequality, leading to a vicious circle.<sup>8</sup>

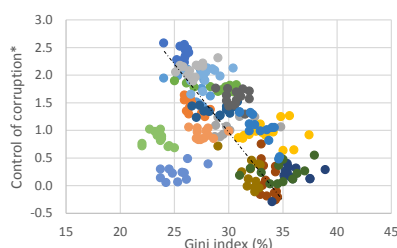
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Weak government frameworks and effectiveness would be reflected in a declining quality of government bureaucracy and administration, and potentially an erosion in the transparency and the accountability of the public sector, which are key elements of a well-functioning economic system.

In our sovereign methodology, our assessment of sovereigns' institutional strength is formed by indicators published by the World Bank. There are three common indicators we refer to: the rule of law, control of corruption and government effectiveness.

Consistent with past economic research, the scatter charts below reveal strong negative correlations between income Gini coefficients and the three measures of institutional strength across time and country.<sup>9</sup> The negative relationships indicate that the higher the level of income inequality, the lower the score on the corresponding measure of institutional strength. This correlation would suggest that a further rise in income inequality across advanced economies, all else being equal, would be credit negative for the sovereign.

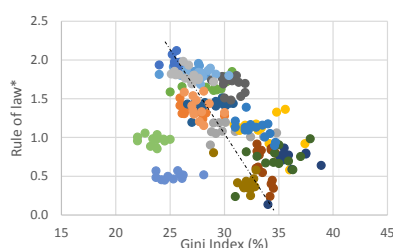
Exhibit 2  
**Control of corruption and Gini coefficients  
2000-15**



\*The world bank measure control of corruption in units of a standard normal distribution, with the mean at zero and standard deviation of one, mostly ranging from -2.5 to 2.5.

Sources: World Bank and Eurostat

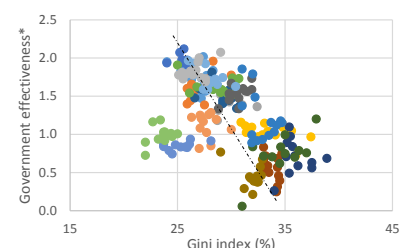
Exhibit 3  
**Rule of law and Gini coefficients  
2000-15**



\*The world bank measure of rule of law in units of a standard normal distribution, with the mean at zero and standard deviation of one, mostly ranging from -2.5 to 2.5.

Sources: World Bank and Eurostat

Exhibit 4  
**Government effectiveness and Gini coefficients  
2000-15**



\*The world bank measure of government effectiveness is in units of a standard normal distribution, with the mean at zero and standard deviation of one, mostly ranging from -2.5 to 2.5.

Sources: World Bank and Eurostat

The correlations presented above are across countries and so nest any structural differences between countries over time. In order to address this, we used bilateral panel regressions (with fixed effects) to see whether the correlation exists for individual countries over time. Results are presented in Exhibit 5 below: they suggest that there are statistically significant and negative relationships between the Gini coefficient and indicators of institutional strength. Regression coefficients are largest for the control of corruption index, where a one percentage point rise in inequality corresponds to a 0.02-0.03 point weakening in the control of corruption index, which had an average level of around 1.1 in the euro area in 2015.

Exhibit 5  
**Regression results of Gini coefficient as independent variables against various measures of institutional strength**

Regression	Fixed Effects	Government Effectiveness Index	Rule of law Index	Control of Corruption Index
Bilateral regression	Fixed effects	-0.016**	-0.008*	-0.027***
	Random effects	-0.021***	-0.012***	-0.032***
Regression with controlled variables	Fixed effects	-0.007	-0.012***	-0.028***
	Random effects	-0.017***	-0.017***	-0.035***

Note: The fixed/random effects in the regression assumes the individual specific effects are correlated/uncorrelated with the independent variables.

\*\*\*, \*\*, and \* indicate levels of statistical significance at 1%, 5% and 10% respectively.

Source: Moody's Investors Service

In order to test the robustness of this result, we also estimated random effects models, and included control variables such as GDP per capita and the unemployment rate, given that these economic factors have been considered prime causes of corruption in some previous research.<sup>10</sup> Results from these robustness tests also indicate that an increase in the Gini coefficient corresponds with weaker

institutional strength; and a one percentage point increase in the Gini coefficient is associated with a larger impact on institutional strength than a one percentage point increase in the unemployment rate. In addition, regressions using the income quintile ratio (the alternative measure of inequality cited earlier) also indicate a significant relationship between income inequality and measures of institutional strength.

However, it is also important to note that the coefficients in our regression models are small: so any change in inequality is only associated with a small change in measures of institutional strength. To illustrate this, we can consider the euro area, where there is considerable heterogeneity of income inequality across countries. The regression results imply that an increase in income inequality from the euro area median to the average of the three countries with the highest income inequality would correspond to a deterioration in the government effectiveness and control of corruption indices. If the sovereign scorecard was applied purely mechanically — that is, without any analytical judgement — that could result in a one-notch deterioration in institutional strength.

## Literature review on income inequality and other aspects of sovereign credit

### Inequality has ambiguous relationship with GDP growth

The relationship between inequality and growth is complex, and economic literature has identified both sides of the story. On the one hand, income inequality is believed to serve as the incentive needed for investment and growth (Chaudhuri and Ravallion, 2006) and can also contribute to growth in subsequent periods (Forbes, 2000). Coser (1956) and Kaldor (1956) also argue wealthier groups tend to hold the resources necessary for investment and, therefore, inequality supports growth. On the other hand, high income inequality can hinder growth through reduced labour supply and productivity, owing to limited access to education and health care for the poor as a result of an unequal society (Wilkinson and Pickett, 2010). It can also bring political instability, which can discourage investment (Berg and Ostry, 2011) and contribute to lower growth (Alesina and Rodrik, 1994). Moreover, Berg and Ostry (2011) found that inequality can also reduce the length of economic expansion in developing countries.

### Increase in inequality related to rising political risk

It is widely acknowledged that inequality poses risks to social and political stability, especially for lower- and middle-income countries. Alesina and Perotti (1996) analysed data from 71 countries for the period between 1960-85 and highlighted that income inequality increases political instability by fueling social discontent, and political stability is enhanced by the presence of a wealthy middle class. Birdsall (1995) asserted that unequal income distributions contribute to social and political polarization. Applying analysis on modern American history, McCarty *et al.* (2006) show that income inequality is an important parameter in explaining political ideologies and voter preferences.

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## Endnotes

[1](#) [Wage developments in the euro area: Increasingly unequal?](#)

[2](#) [Wage developments in the euro area: Increasingly unequal?](#)

[3](#) The Lorenz curve is a graphical representation of income distribution in relation to the population share. See Lorenz, M. O. (1905), Methods of measuring the concentration of wealth, *Publications of the American Statistical Association*. Vol. 9, No. 70, pp. 209-219.

[4](#) You and Khgram (2005), Glaeser *et al.* (2003).

[5](#) McCarthy and Zald (1977).

[6](#) Licht *et al.* (2007).

[7](#) Sonin (2003).

[8](#) Chong and Gradstein (2007).

[9](#) The results are also robust for individual countries over time.

[10](#) Treisman (2000), Paldam (2002).

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