



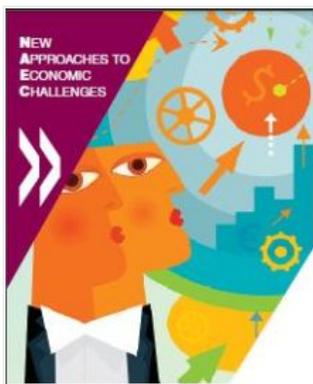
## OECD INSIGHTS

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# Economic complexity, institutions and income inequality

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by Guest author



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Is a country's ability to generate and distribute income determined by its productive structure? Decades ago Simon Kuznets proposed an inverted-u-shaped relationship describing the connection between a country's average level of income and its level of income inequality. *Kuznets' curve* suggested that income inequality would first rise and then fall as countries' income moved from low to high. Yet, the curve has proven difficult to verify empirically. The inverted-u-shaped relationship fails to hold when several

Latin American countries are **removed from the sample**, and in recent decades, the upward side of the Kuznets curve has vanished as inequality in many low-income countries has **increased**. Moreover, several East-Asian economies have grown from low to middle incomes while **reducing income inequality**.

Together, these findings undermine the empirical robustness of Kuznets' curve, and indicate that GDP per capita is a measure of economic development that is insufficient to explain **variations in income inequality**. This agrees with recent work arguing that inequality depends not only on a country's rate or stage of growth, but also on its type of **growth and institutions**. Hence, we should expect that more nuanced measures of economic development, such as those focused on the types of products a country exports, should provide information on the connection between economic development and inequality that transcends the limitations of aggregate output measures such as GDP.

Scholars have argued that income inequality depends on a variety of factors, from an economy's factor endowments, geography, and institutions, to its historical trajectories, changes in technology, and returns to capital. The combination of these factors should be expressed in the **mix of products** that a country makes. For example, colonial economies that specialised in a narrow set of agricultural or mineral products tend to have more unequal distributions of political power, human capital, and wealth. Conversely, sophisticated products, like medical imaging devices or electronic components, are typically produced in diversified economies that require more inclusive institutions. Complex

industries and complex economies thrive when workers are able to contribute their creative input to the activities of firms.

This suggests a model of heterogeneous industries in which firms survive only when they are able to adopt or discover the institutions and human capital **that work best** in that industry. According to this model, the **composition of products** that a country exports should tell us about a country's institutions and about the quality of its human capital. This model would also suggest that a country's mix of products should provide information that explains inequality and that might escape aggregate measures of development such as GDP, average years of schooling, or survey-based measures of formal and informal institutions.

With our colleagues from the MIT Media Lab, we used the **Economic Complexity Index** (ECI) to capture information about an economy's level of development which is different from that captured in measures of income. Economic complexity is a measure of the knowledge in a society that gets translated into the products it makes. The most complex products are sophisticated chemicals and machinery, whereas the least complex products are raw materials or simple agricultural products. The economic complexity of a country depends on the complexity of the products it exports. A country is considered complex if it exports not only highly complex products but also a large number of different products. To calculate the economic complexity of a country, we measure the average ubiquity of the products it exports, then the average diversity of the countries that make those products, and so forth.

For example, in 2012, Chile's average income per capita and years of schooling (\$21,044 at PPP in current 2012 US\$ and 9.8 mean years of schooling) were comparable to Malaysia's income per capita and schooling (\$22,314 and 9.5), even though Malaysia ranked 24th in the ECI ranking while Chile ranked 72nd. The rankings reflect differences in these countries' export structure: Chile largely exports natural resources, while Malaysia exports a diverse range of electronics and machinery (see illustration [here](#)). Moreover, these differences in the ECI ranking also point more accurately to differences in these countries' level of income inequality. Chile's inequality as measured through the Gini coefficient (0.49) is significantly higher than that of Malaysia (0.39)

We separated the correlation between economic complexity and income inequality from the correlation between income inequality and average income, population, human capital (measured by average years of schooling), export concentration, and formal institutions. Our results document a strong and robust correlation between the economic complexity index and income inequality. This relationship is robust even after controlling for measures of income, education, and institutions, and the relationship has remained strong over the last fifty years. Results also show that increases in economic complexity tend to be accompanied by decreases in income inequality.

Our findings do not mean that productive structures solely determine a country's level of income inequality. On the contrary, a more likely explanation is that productive structures represent a high-resolution expression of a number of factors, from institutions to education, that co-evolve with the mix of products that a country exports and with the inclusiveness of its economy. Still, because of this

co-evolution, our findings emphasize that productive structures are not only associated with income and economic growth, but also with how income is distributed.

We advance methods that enable a more fine-grained perspective on the relationship between productive structures and income inequality. The method is based on introducing the Product Gini Index or PGI, which estimates the expected level of inequality for the countries exporting a given product. Overlaying PGI values on the network of related products allows us to create maps that can be used to anticipate how changes in a country's productive structure will affect its level of income inequality. These maps provide means for researchers and policy-makers to explore and compare the complex co-evolution of productive structures, institutions and income inequality for hundreds of economies.

### Useful links

This article is based on [Linking Economic Complexity, Institutions and Income Inequality](#), by D. Hartmann, M.R. Guevara, C. Jara-Figueroa, M. Aristarán, C.A. Hidalgo.

### [The Atlas of Economic Complexity](#)

The OECD is organising a Workshop on Complexity and Policy, 29-30 September, OECD HQ, Paris, along with the European Commission and INET. Watch the webcast: [29/09 morning](#); [29/09 afternoon](#); [30/09 morning](#)

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