

A Consistent Cross-Country Measure of Household Durable Consumption Wealth and Inequality

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In their celebrated report on the measurement of economic performance and social progress, Stiglitz, Sen and Fitoussi (2009, SSF) recommended placing a greater focus on household consumption and wealth than on national production, whilst accounting for their respective distributions. As Adam Smith (1776) argued, an individual's wealth is "the degree in which he can afford and enjoy the necessaries, conveniences, and amusements of human life." Thus material wealth matters to the extent that it leads to useful consumption. Without downplaying the importance of non-material factors, which inform living standards metrics such as the UNDP's Human Development Index and the OECD's Better Life Index, our focus in this study is on the measurement of material wellbeing. Specifically, we examine wellbeing that is obtained from material consumption with an emphasis on household's ownership of durable consumption goods that enable a stream of consumption out of physical wealth held by the household.

We document a framework for measuring households' material wellbeing based on observed consumption patterns from durable consumption goods across households and across countries. We apply the framework to unit record data from 40 countries over the period 2000-2012 obtained from the OECD's PISA educational survey. Our applications, which include household, country and 'global' level analysis, provide new information on the level and distribution of household wealth and material wellbeing within and across countries. While our measures bear expected relationships with other material wellbeing measures, such as GNI per capita and the Gini coefficient of national income distributions, there are some substantive differences which indicate that our application of this framework yields new insights about the level and distribution of wealth and material wellbeing within and across countries.

Key contributions of our study are two-fold. First, motivated by both Smith (1776) and Sen (1985), we develop a framework for measuring household material wellbeing that satisfies the recommendations of SSF within a consistent capabilities framework. Specifically, we consider the annual flow of consumption services from a set of consumer durables within the home, which (under certain assumptions) approximates the welfare associated with these possessions at the margin.

Second, we apply this framework to the household-level data of the OECD's Programme for

International Student Assessment (PISA) survey. The PISA survey aims to inform educational systems around the world by analysing the abilities and attitudes of 15 year old students from across 75 economies, with surveys conducted triennially beginning in 2000. Supplementary questions on the home environment were introduced to consider the determinants of educational achievement; this includes the presence of an array of cultural, educational and status goods, from which we define a household's material wellbeing (HMW). We map HMW into three series: the Material Wellbeing Index (MWI) represents the country-year mean of HMW; the Atkinson's (1970) Inequality Measure (AIM) captures the degree of inequality in the country-year-specific HMW distribution; and the Inequality-adjusted MWI (IMWI) reflects the level of MWI which, if enjoyed by everyone, would maintain social welfare under certain assumptions. We calculate each of these metrics during both pre- and post-GFC periods, then validate the measures through comparisons with income-based alternatives and a range of other wellbeing measures. The constructed measures have a number of strengths. First, in accordance with SSF, MWI and IMWI are consumption-based and wealth-focused, whilst AIM and IMWI capture distributional concerns. Second, the data we employ is freely-available independent data managed by the OECD, with significant undertakings to ensure the representativeness of the sample. Further, the PISA sampling design provides a strong element of demographic control – all units are a household with a 15 year old student – which improves the comparability over time and across countries. Drawbacks to the measure include (i) truncation at the top of the distribution, and (ii) the assumption of interpersonal comparability in utility functions, although the latter is true for all aggregate indices, and our construction of the IMWI at least enables differing interpersonal value judgements to be accommodated.

While it is difficult to validate any new metric, the evidence indicates that we are indeed capturing important aspects of material wellbeing. First, micro-level analysis shows our measure of household material wellbeing is positively associated with household income (an alternative measure of the services flowing from household wealth). Second, this relationship also holds at the national level. Third, we consider cross-country convergence, finding that countries with lower levels of MWI have higher subsequent growth.

Fourth, our central estimate of household possession inequality is highly correlated with the Gini coefficient of national income distributions. Thus more unequal distributions of household resources are associated with more unequal income distributions. We use the micro-level data to examine 'global' inequality and provide results that support the contention of Milanovic (2012) that the world is becoming a more equal place; our results suggests this holds for household possessions as well as incomes.

Fifth, we find that our MWI and AIM measures out-perform GDP-based and income inequality measures in predicted the cross-country outcomes for some (but not all) mortality statistics, such as infant mortality. Thus the level and distribution of household wealth appear to be more closely related than income-based measures for important health outcomes of the population.