

IZA DP No. 6430

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Discussion Paper No. 6430  
March 2012

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## ABSTRACT

### Do Middle Classes Bring Institutional Reforms?\*

We revisit the link between poverty, the middle class and institutional outcomes using a newly developed cross-country panel dataset containing detailed information on the distribution of income and expenditures. When the size of the middle class increases (measured as the proportion of people with income above 10 US Dollars a day in PPP terms), social policy on health and education becomes more active and the quality of governance regarding democratic participation and official corruption improves. This does not occur at the expense of economic freedom, as an expansion of the middle class also implies more market-oriented economic policy on trade and finance. The impact of a larger middle class appears to be more robust than those of lower poverty, lower inequality, or higher GDP per capita.

JEL Classification: D3, H5, O1, O4

Keywords: poverty, middle class, income, institutions, development

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\* The authors gratefully acknowledge financial support from the Spanish Fund for Latin America and the Caribbean (SFLAC). We are also grateful to Nancy Birdsall, Francisco Ferreira, Luis Servén and participants to the Barcelona workshop on Socio-Economic Mobility and Middle Class in Latin America for insightful comments and suggestions. Tomoko Wada provided excellent research assistance. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

## 1. Introduction

How the middle class affects institutions and the social contract has been subject to widespread attention. Numerous empirical analyses have demonstrated that lower inequality and a larger “class in the middle” leads to better institutional outcomes (Barro, 1999; Easterly, 2001; Easterly *et al.*, 2006).<sup>1</sup> Yet, middle class status is as much defined by people’s relative position on the distribution of income as by occupational status and absolute income (Goldthorpe and McKnight, 2004; Lopez-Calva and Ortiz-Juarez, 2011), and many of the positive impacts of middle class societies depend on people exiting poverty and earning higher incomes.

Theoretical models postulate a positive impact of wealthier middle class societies on economic and social outcomes through several channels. A first channel stresses the impact of middle class endowments, preferences and values on economic growth. The seminal studies of Banerjee and Newmann (1993) and Galor and Zeira (1993) suggest, for instance, that members of the middle class are less vulnerable to the credit market imperfections and fixed costs in physical and human capital accumulation that prevent the poor from investing and growing.<sup>2</sup> Another strand of literature highlights the importance of domestic markets for industrialization and the higher demand of the middle class for quality goods (Murphy, Shleifer and Vishny, 1989a and 1989b; Matsuyama, 1992 and 2002; Foellmi and Zweimueller, 2006). Doepke and Zilibotti (2005, 2008) also argue that middle class families are in occupations that require skills and experience, thus they develop work ethics and patience.

A related vein of literature also explores the link between wealthier middle classes and institutional outcomes. Particular attention has been given to the “modernization theory” (Lipset, 1959), which looks at the extent to which more affluent societies favor the creation and consolidation of democracies (and, more generally, good institutions). Conceptually, higher incomes may reduce conflict over its distribution (Benhabib and Rustichini, 1996; Benhabib and Przeworski, 2006), and citizens with higher human capital may be more effective in sustaining good institutions (Glaeser *et al.*, 2004). While data do show a clear correlation, there is a debate on the extent to which the relationship can be interpreted causally (Benhabib *et al.*, 2011; Acemoglu *et al.*, 2008 and 2009; Epstein *et al.*, 2006; Glaeser *et al.*, 2004).

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<sup>1</sup> There is a rich related literature on the institutional and growth effects of inequality. See, for instance, Alesina and Rodrik (1992), Alesina and Perotti (1996), Keefer and Knack (1994), Perotti (1996), and Persson and Tabellini (1994).

<sup>2</sup> These works were followed by a number of related studies. See, among many others, Banerjee and Duflo (2003), Galor and Moav (2004), Voitchovsky (2005), and Foellmi and Oechslin (2008).

Despite the relevance and strong interest in the issue, analyses of the impacts of wealthier middle classes face constraints in measuring income directly, and most use GDP per capita as a proxy for income. Only a handful of cross country datasets report headcount indexes for income thresholds other than poverty, and the ones that exist span too short time periods to exploit both cross country and time series variations. As a result, current analyses fail to investigate directly whether, as postulated by the literature, “critical masses” of people overcoming certain income thresholds can affect institutional outcomes.

This paper makes two contributions. First, it presents a new panel dataset that contains information about households’ mean income and expenditures, inequality, and headcount indexes for several income and expenditures thresholds, which complements existing large cross-country datasets reporting poverty and inequality measures. The dataset spans 672 yearly observations across 128 countries. To build the dataset, we draw both from a collection of nationally representative household surveys, and from parameterized distributions of income and expenditures using parameters from the World Bank’s *PovCal* database. Second, we use this new dataset to test the extent to which policy and institutional outcomes are affected by an expansion of the middle class, which in the paper is measured as the proportion of the population who have achieved income above 10 US dollars a day.

The joint endogeneity of the size of the middle class (and of the income distribution in general) is a concern. So is the likely presence of unobserved country-specific effects. We use an econometric methodology that, by taking advantage of the panel nature of the data, attempts to gauge the causal effect of expansions in the middle class while controlling for country-specific effects. Specifically, the estimation draws from the generalized method of moments (GMM) estimator for panel data developed by Arellano and Bond (1991) and Arellano and Bover (1995). We estimate the impact of the middle class on policies and institutions in three broad categories: social policy regarding public expenditures in health and education, market-oriented economic structure on international trade and finance, and quality of governance regarding democratic participation and absence of official corruption. Our analysis thus also relates to the literature investigating the association between poverty, institutions and growth (Dollar and Kraay, 2002; Lopez and Serven, 2009).

We find that when the size of the middle class increases, social policy on health and education becomes more active, and the quality of governance regarding democratic participation and official corruption improves. This does not occur at the expense of economic freedom, as an expansion of

the middle class also implies more market-oriented economic policy on trade and finance. The impact of a larger middle class appears to be more robust than the impact on the same outcomes of lower poverty, lower inequality, and also of higher GDP per capita. Overall, our findings suggest that the development of the literature studying the association between income and socioeconomic factors may have been hindered by its limitation in measuring household income directly.

The paper is organized as follows. Section 2 discusses the dataset; Section 3 presents the empirical approach; Section 4 discusses the results, and Section 5 concludes.

## **2. Data description**

The analysis is based on a cross-country panel dataset that contains information about headcount indexes for various thresholds that we have purposely built for the analysis. The dataset spans 672 yearly observations across 128 countries, from 1967 to 2009 (around 90 percent of the observations are however from the 1990's and 2000's). To compute the headcount indexes we draw from various World Bank collections of harmonized nationally representative household surveys that contain information on income or expenditures, and from simulated distributions of income and expenditures from the World Bank's *PovCal* database, whose parameters fit the distribution of nationally representative household surveys (see Table 1). Because of the nature of the primary data, 17 percent of the countries and 38 percent of the annual observations are from Latin America. The dataset is fairly balanced across levels of economic development: 21 percent of the observations are from high income countries, 37 percent from upper middle income, 30 percent from lower middle income, and 11 percent from low income countries. Because surveys tend to report information either for income or expenditures, we report for each country only one of the two measures: 57 percent of the sample reports information on income, and 43 percent on expenditures.

All income and expenditures data are in 2005 PPP US Dollars. For each survey, we first correct current units for inflation using the national CPIs, and then convert them in 2005 US Dollars PPP using the International Comparison Program (ICP) PPP conversions. Since the ECAPOV, PovCal and SEDLAC surveys are used to compute World Bank poverty figures, we used for these surveys the same conversion, weights and methodology that has been used to compute internationally comparable poverty data.

For the analysis in this paper, we have collapsed yearly observations into five years averages. We have also dropped from the analyses countries with population of less than two millions, and have

excluded Yemen because of an abnormal association between mean income and GDP per capita suggesting that data quality may be an issue. We are left with 343 observations over 110 countries. By taking averages, the proportion of observations from Latin America also reduces to 24 percent. We use the dataset to capture, in each country, the proportion of people living in poverty (below 2.5 US dollars a day in per capita PPP terms), the percentage of the population that lives with more than 10 US dollars a day (our “middle class threshold”), and overall income inequality as measured by the Gini coefficient. In using 10 dollars a day as our middle class threshold, we follow analyses that have looked at vulnerability to poverty as a prerequisite to middle class status. These analyses find that if the middle class threshold is set excessively close to the poverty threshold, people remain excessively vulnerable to shocks that would bring them back into poverty, and may not behave differently than the poor (see Goldthorpe and McKnight, 2004; and Lopez-Calva and Ortiz-Juarez, 2011). Using a 10 dollars a day threshold also brings us close to papers investigating middle class composition and trends at a global level (Milanovic and Yitzhaki, 2002; Kharas, 2010).

Table 2 shows the correlation between income distribution variables: while poverty and the middle class are negatively correlated, they do so imperfectly, suggesting that each measure carries some information. Other variables that we use in the analysis are GDP per capita in 2005 PPP terms, public expenditures in education and health, and mean applied tariffs, all from the World Development Indicators; credit market liberalization, from the *Economic Freedom of the World* project; the polity score for democracy, from *Polity IV*; and the corruption index from the *International Country Risk Guide*.

### 3. Econometric Methodology

We estimate a set of regression equations of the form,

$$y_{i,t} = \tilde{\beta}' X_{i,t} + \eta_i + \mu_t + \varepsilon_{i,t} \quad (1)$$

where  $y$  represents a given policy outcome,  $X$  is a set of explanatory variables that include the size of the middle class,  $\eta$  is an unobserved country-specific effect,  $\mu$  is an unobserved time-specific effect,  $\varepsilon$  is the regression residual, and the subscripts  $i$  and  $t$  represent country and time period, respectively. The regression equation poses two main challenges for estimation. The first is that the explanatory variables are likely to be jointly endogenous with the policy outcomes; that is,  $E[X_{i,t}\varepsilon_{i,t}]$  may not be zero. The second challenge is the presence of unobserved time and country-specific effects, which may be correlated with the explanatory variables. To address these challenges, the

estimation draws from the generalized method of moments (GMM) estimator for panel data developed by Arellano and Bond (1991) and Arellano and Bover (1995).

We deal with unobserved time effects through the inclusion of period-specific intercepts. Dealing with unobserved country effects is not as simple given the possibility that the regression equation contains endogenous explanatory variables. The GMM estimator takes advantage of the panel nature of the data set in dealing with country-specific effects and endogenous explanatory variables. Unobserved country-specific effects are controlled for by differencing the regression equation and using instrumental variables based on previous observations of the explanatory variables. Differencing the regression equation also controls for potential level effects caused by some countries reporting income data, while other expenditures. The method relies on similar instrumental variables to control for joint endogeneity.

Specifically, the GMM estimator uses jointly the regression in levels and in differences. For the regression in levels, it uses as instruments the previous differences of the explanatory variables. For the regression in differences, it uses as instruments the previous levels of the explanatory variables. These are appropriate instruments under the following assumptions: (1) future realizations of the error term do not affect current values of the explanatory variables, (2) the error term  $\varepsilon$  is serially uncorrelated, and (3) *changes* in the explanatory variables are uncorrelated with the unobserved country-specific effect.

As Arellano and Bond (1991) and Arellano and Bover (1995) show, this set of assumptions generates moment conditions that allow consistent estimation of the parameters of interest. For the regression in levels, these assumptions imply  $E[(X_{i,t-1} - X_{i,t-2}) \cdot (\eta_i + \varepsilon_{i,t})] = 0$ . For the regression in differences, they imply  $E[X_{i,t-2} \cdot (\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0$ . Since typically the moment conditions over-identify the regression model, a Hansen-type test can be used to check the validity of the moment conditions and their underlying assumptions.

#### **4. Empirical Results**

We begin the analysis by looking at the simple relation between economic development and institutions (Table 3). A substantial body of evidence finds that policies and institutions have a strong influence on economic development (see Barro, 1991; Easterly and Levine, 2001; and Chang, Kaltani and Loayza, 2009, among others). This is not, however, a unidirectional causal relationship

but a symbiotic one, by which economic development also shapes the evolution of social policies and government institutions (Krueger, 1995).

We follow most the literature and represent a country's economic development by its GDP per capita (Acemoglu, Johnson, and Robinson, 2001; Easterly and Levine; 2003; and Caselli, 2005), and divide policies and institutions in three broad categories: social policy regarding public expenditures in health and education, market-oriented economic structure on international trade and finance, and quality of governance regarding democratic participation and absence of official corruption.

A clear result emerges: GDP per capita significantly and beneficially affects the indicators of social policy, economic structure, and governance. Specifically, an increase in GDP per capita induces a rise in public health and education expenditures, a reduction in tariff rates on international trade, a liberalization of credit markets, an improvement in democratic participation, and a reduction in official corruption.

To the extent that other aspects of the income distribution are also germane in shaping policies and institutions, it is important to consider them explicitly for both statistical and conceptual reasons. From a statistical perspective, it is unlikely that a regression model with only GDP per capita as explanatory variable be well specified. In fact, in the context of the GMM estimator, the Hansen test rejects the moment conditions in three of the six regressions. On conceptual considerations, we would like to know what aspect of the income distribution is most relevant: is it average output, income inequality, the prevalence of poverty, or, more specifically, the size of the middle class?

As expected, GDP per capita is positively correlated with the size of the middle class and negatively so with the poverty headcount index and the Gini coefficient of income inequality (Table 2). *A priori* it is not clear however which of these variables would be most relevant in shaping different policies and institutions. In particular, how important is the size of the middle class in this regard?

Table 4 presents the results of the set of regressions on the indicators of social policy, economic structure, and governance, considering as explanatory variables not only GDP per capita but also measures of poverty, inequality, and the middle class. For this augmented model, the Hansen test does not reject the regression specification (i.e., moment conditions) for any of the regressions.

When controlling for the size of the middle class, the coefficients corresponding to GDP per capita lose their significance, size, or even sign, depending on the regression. At the same time, the size of the middle class appears to now carry the coefficients' sign and significance that GDP per capita used to have when it was the only explanatory variable. It is plausible therefore that the

beneficial effect that had been attributed to changes in GDP per capita actually corresponds to the evolution of the middle class. An expansion of the middle class has a significant impact on social policy by inducing an increase of public health and education expenditures as a share to GDP. A larger middle class does not, however, mean a more state-driven economy. To the contrary, an increase in the size of the middle class produces a more market-oriented economy by reducing tariffs on international trade and liberalizing the financial sector. No less remarkable is the effect on the quality of governance. An expansion of the middle class induces an improvement in democratic participation and a decline in official corruption.

The indicators of poverty and inequality are also relevant determinants for social policies, economic structure, and governance quality, but not always in the expected way or with the consistency shown by the middle class measure. For instance, a decrease in income inequality seems to produce a decline in official corruption (as possibly expected) but also a reduction in democratic participation (which may be harder to explain).<sup>3</sup> Similarly, a decrease in the poverty headcount appears to induce a liberalization of international trade but also, surprisingly, a constriction of credit markets.

## 5. Conclusion

This paper provides evidence that the expansion of the middle class may be a relevant aspect of economic development for reforming government policies and institutions. Using a GMM estimator on a panel of cross-country and time-series observations, the paper finds that when the size of the middle class increases, measured as the proportion of people with income above 10 US dollars a day, social policy on health and education becomes more active and the quality of governance regarding democratic participation and official corruption improves. This does not occur at the expense of economic freedom, as an expansion of the middle class also implies more market-oriented economic policy on trade and finance.

Behind these effects, there may be a combination of characteristics associated with the evolution of the middle class: more enlightened and numerous political participation, stronger voice, larger similarity of preferences and values for policy and institutional reforms, and stronger stakes into

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<sup>3</sup> For a review of potentially ambiguous effects of inequality see, among many, Bollen and Jackman (1995), Weede (1997), Piketty (1995), Benabou (2000), Benabou and OK (2001), Banerjee and Duflo (2003) and Esteban and Schneider (2008).

property rights and wealth accumulation, among others. Distinguishing the relative importance of these mechanisms could be a worthy subject for future research.

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**Table 1: Data Sources**

Source	Number of countries	Number of observations	Income or expenditures	Focus
SEDLAC	22	254	Income	Latin America and the Caribbean
ECAPOV	14	77	Expenditures	Eastern Europe and Central Asia
LIS	21	102	Income	High income
PovCal	71	239	Expenditures (88%)	Low and Middle income

Sources: SEDLAC: *Socio-Economic Database for Latin America and the Caribbean*, <http://sedlac.econo.unlp.edu.ar/eng/>; ECAPOV: World Bank's internal database for Eastern Europe and Central Asia; LIS: Luxembourg Income Study, <http://www.lisdatacenter.org/>; PovCal: <http://iresearch.worldbank.org/PovcalNet/povcalSvy.html>.

**Table 2: Correlations among Income/Expenditures Distribution Variables**

	Middle Class	Poverty	Inequality	Output per capita
Middle Class	1.000			
Poverty	-0.749 ***	1.000		
Inequality	-0.320 ***	0.201 ***	1.000	
Output per capita	0.857 ***	-0.923 ***	-0.190 ***	1.000

**Table 3: Social Outcomes and Economic Development**

	<i>Social Policy</i>		<i>Economic Structure</i>		<i>Governance</i>	
	Health Expenditures /GDP	Education Expenditures /GDP	Mean Applied Tariff	Credit Mkt Liberalization	Polity Score	Corruptio
<b>Output per capita</b> (ln of GDP per capita)	1.209*** [6.447]	0.717*** [3.183]	-2.179*** [-3.882]	0.585*** [3.897]	2.727*** [4.563]	-0.656*** [-4.423]
Observations (5 year averages)	269	192	265	294	318	285
Number of countries	107	97	103	100	106	92
Hansen Test - p value	0.0349	0.330	0.0340	0.308	0.230	0.0450

Notes:

1. z-statistics in brackets

2. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

3. For explanatory variables, USD are in PPP adjusted, constant 2005 prices

**Table 4: The Middle-Class Effect**

	<i>Social Policy</i>		<i>Economic Structure</i>		<i>Governance</i>	
	Health Expenditures / GDP	Education Expenditures / GDP	Mean Applied Tariff	Credit Mkt Liberalization	Polity Score	Corruption
<b>Middle Class</b>	2.054***	2.918**	-10.945***	1.357***	6.431***	-1.764***
(% of population with income above 10 USD)	[3.849]	[2.337]	[-3.072]	[2.799]	[4.068]	[-4.767]
<b>Poverty</b>	-0.019**	-0.042**	0.203***	0.047***	-0.042**	-0.011*
(2.5 USD a day Poverty Headcount)	[-2.411]	[-2.472]	[2.874]	[3.383]	[-2.345]	[-1.825]
<b>Inequality</b>	-3.716**	3.028	20.736***	-0.209	9.262**	4.083***
(Gini Index)	[-2.456]	[1.360]	[3.373]	[-0.165]	[2.164]	[3.866]
<b>Output per capita</b>	0.121	-0.922	5.485**	1.292***	0.280	-0.470**
(ln of GDP per capita)	[0.416]	[-1.310]	[2.439]	[3.009]	[0.334]	[-2.218]
Observations (5 year averages)	269	192	265	294	318	285
Number of countries	107	97	103	100	106	92
Hansen Test - p value	0.174	0.640	0.934	0.469	0.701	0.451

Notes:

1. z-statistics in brackets

2. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

3. For explanatory variables, USD are in PPP adjusted, constant 2005 prices