Inequality and Underdevelopment: Testing Easterly's Wheat-Sugar Ratio Instrument With New Evidence

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1. Introduction

In the wake of the greatest economic contraction since the Great Depression and a weak recovery, the issue of inequality has risen to prominence in economic and political spheres. Although inequality has been increasing for decades, the severity of the Great Recession, the high levels of inequality that accompanied the crisis, and the unevenness of the recovery have brought the subject back to the forefront of the public mind. Beginning in December 2007, the global financial crisis and its associated recessionary period wreaked havoc on the world economy, leaving very few nations untouched by its adverse effects. One reason for a renewed focus on inequality is the financial underpinnings of the Great Recession, which some researchers contend contributed to the crisis by incentivizing large sections of the income distribution to increase leverage to maintain levels of consumption (Mian and Sufi 2010). Figure 1 shows the frequency of Google searches for the phrase "income inequality" since 2005. As the chart shows, there was actually a downward trend in searches for the phrase leading into the crisis followed by a leveling off from 2008 to 2011. The chart also clearly shows that the number of searches has been increasing as the slow recovery lumbers forward toward the present.

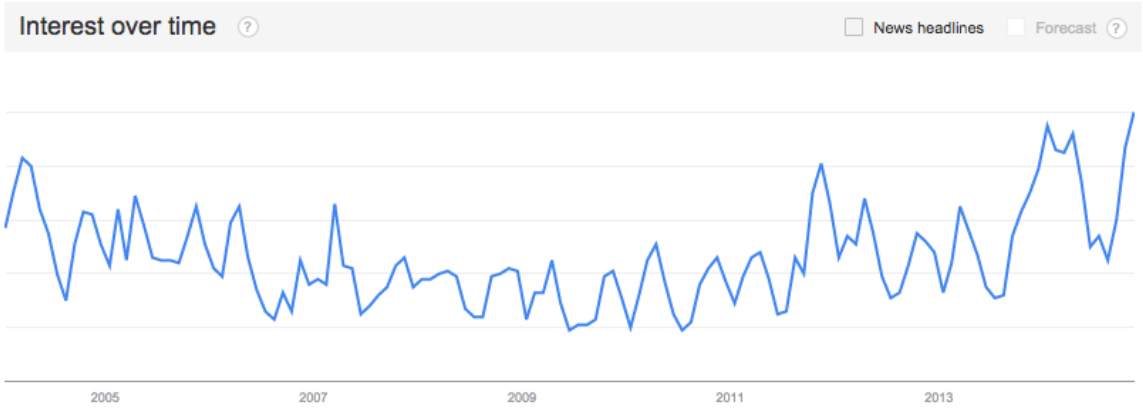

Figure 1

This renewed interest has fueled more academic research into the subject, as well as best-selling books such as Thomas Piketty's *Capital in the Twenty-First Century*. There has been extensive research into both the determinants and the effects of rising inequality and, while the evidence is far from conclusive, there is increasing concern that crossing a particular threshold of inequality begins to have negative effects on economic growth and development.

Any attempt to examine the link between inequality and development must be mindful of the inherent endogeneity of the relationship, which will bias the results of ordinary least squares estimation. Because it can be argued that growth leads to inequality and that inequality has an effect on development, econometric techniques must be employed that account for this reverse causality. To this end, some of the recent work in the field has sought valid instruments that allow researchers to disentangle the effect of inequality from other factors related to development. In 2007 William Easterly's "Inequality Does Cause Underdevelopment: Insights From A New Instrument" was published in the *Journal of Economic Development*. In this paper Easterly proposes the use of a new instrument for inequality that allows him to eliminate the endogeneity issue and obtain an unbiased estimate of the effect of inequality on development. Assuming that family farms growing wheat are the foundation for more egalitarian societies and plantations employing slave labor ultimately result in higher inequality, Easterly uses the ratio of land suitable for raising wheat to land suitable for growing sugarcane as an instrument for inequality (Easterly 2007). Using this instrument in a two-stage least squares estimation, Easterly finds that inequality does indeed predict a lower level of development as measured by income per capita (Easterly 2007).

My research aims to confirm the validity of Easterly's wheat-sugar instrument, as well as estimate the effect of inequality on development outcomes using new evidence. Easterly uses data from the United Nations University World Institute for Development Economics Research's (UNU-WIDER) World Income Inequality Database (WIID) from 2000, which has observations through 1998. I update the analysis by using data from David N. Weil, which has observations through 2009, and then compare my results to Easterly's to determine if his wheat-to-sugar land ratio holds up as a valid instrument. I also provide estimations of the relationship between inequality and development using this instrument with the new evidence. Using a different dataset with more current observations I am able to reproduce many of Easterly's results very closely, both in the size of the effect, as well as the statistical significance. However, some key robustness checks and an overidentification test provide evidence against the validity of his wheat-sugar ratio instrument and call into question the analysis that is built upon the use of this instrument to eliminate the endogeneity bias.

2. Literature Review

The literature examining the relationship between inequality and development is extensive and dates back to foundational papers by Kuznets and others in the 1950s. Despite this rich historical background, data quality and computational issues have prevented the illumination of a "law" of inequality and development, the relationship of which is fiercely contested to the present day. One of the most fundamental issues to be addressed in any attempt to study the complex relationship between inequality and development is the question of whether or not inequality, in and of itself, is a bad thing. As Robert Solow is crystallizing his endogenous growth model in the mid 1950s,

researchers like Nicholas Kaldor are also focused on capital as they investigate the relationship between inequality and growth. Kaldor's work finds that inequality promotes growth because it puts more income in the hands of capitalists that then invest in growth-enhancing technologies (Kaldor, 1961). At the time, this result is difficult to discredit because of the importance of physical capital accumulation in the early stages of industrialization that characterize the time period on which Kaldor is doing his analysis.

During the Cold War era, the topic seems to fade somewhat into the background as the focus turns to investigating the different outcomes of planned and market economies. However, there is renewed interest in the subject of inequality in the 1990s as globalization and technology begin impacting the distribution of income within and between countries. In 1992, the seminal work by Mankiw, Romer, and Weil marks a shift in perspective with its emphasis on human capital's role, as opposed to the previous focus on physical capital, in determining income levels in steady state (Mankiw et al. 1992). Still cited often, this paper is the foundation for those exploring the mechanisms by which inequality can affect total factor productivity, growth, and development.

The emphasis on physical capital accumulation continues to wane throughout the 1990s as researchers begin looking for other determinants of differing levels of development. Investigating new mechanisms by which inequality could affect development, research such as Alesina and Rodrik (1994) and Persson and Tabellini (1994) focus on the assumption that redistributive and growth-enhancing policies are somewhat mutually exclusive and that the middle and lower classes may vote for redistributive policies that are potentially harmful to growth. Others during this period find conflicting evidence that either confirms a positive relationship between inequality

and development, finds no relationship, or shows the relationship can not be captured by a linear model (Forbes, 2000; Barro, 2000; Banerjee and Duflo, 2003). Despite the lack of conclusive evidence for a negative relationship between inequality and development, in the late 1990s and early part of this century attention begins shifting away from the question of whether or not inequality is harmful to growth and moves toward investigating the mechanisms through which inequality can potentially affect growth, as well as the determinants of inequality.

The main emphasis during this period is on institutional quality as the channel through which inequality affects growth and development. Bourguignon and Verdier (2000) and Acemoglu (2005) look to rent seeking as the answer, hypothesizing that a wealthy elite work to undermine democratic institutions in order to maintain their position. Other avenues of exploration dive deeper into channels that result in disparities in the quality of institutions, including ethnic fractionalization (Easterly and Levine, 1997), geographic location (Sachs and Warner, 1997), settler mortality (Acemoglu, Johnson, and Robinson, 2001), legal origin (Levine, 2005), and human capital development (Galor and Moav, 2004). It is important to use these other lines of research and hypotheses to serve as competing or complementary theories to the theory that high inequality leads to underdevelopment.

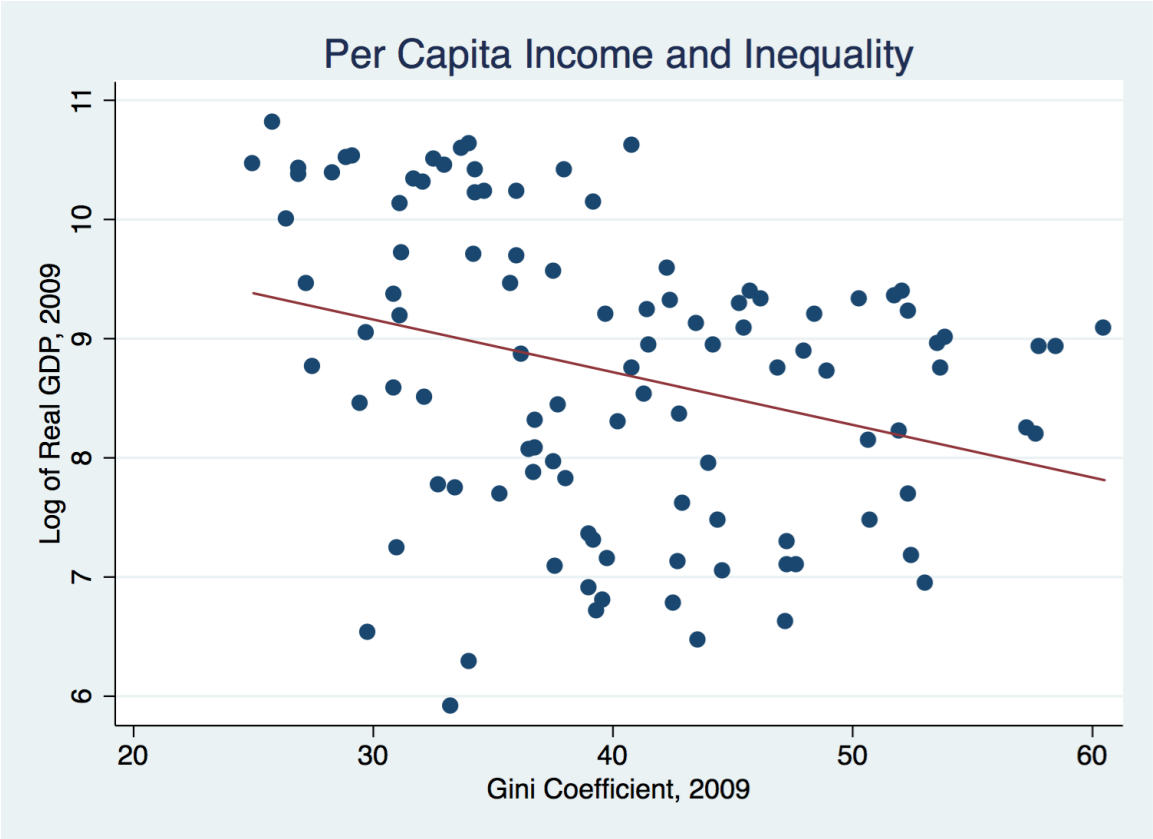

Figure 2

While the evidence is still mixed regarding how inequality affects development and what level of inequality begins to deter economic growth, Figure 2 clearly shows that there is a negative relationship between GDP per capita and inequality and, as detailed above, a number of researchers have explored the different mechanisms by which inequality can potentially impact growth and development. Easterly (2007) follows work by Engerman and Sokoloff that focus on factor endowments as a source of inequality, which in turn affect levels of development (Sokoloff and Engerman, 2000; Engerman et al., 2002). They propose that factor endowments alone are not able to explain disparate levels of development but can explain levels of inequality and the quality of institutions that develop in a given country, which then determine growth and development. Somewhat similar to Acemoglu, Johnson, and Simon's argument about settler mortality

affecting institutional development, Engerman and Sokoloff propose that initial factor endowments result in disparate levels of inequality and, consequently, differences in the quality of institutions.

Their contention is that areas endowed with soil suitable for sugarcane, coffee, and other crops that experience scale economies and are more efficiently produced on plantations with slave labor will develop institutions that protect the elite that own the plantations and that these institutions carry forward to the present day. They contrast this situation with family farms in the northern U.S. and Canada owned by European immigrants sharing similar levels of human capital and growing grain crops that do not experience the same scale economies. Engerman and Sokoloff contend that these populations are more likely to establish institutions that preserve this relative equality and protect competitive market economies. The authors argue that these factor endowments had an initial and exogenous effect on the level of inequality, which in turn affects the quality of the institutions that develop.

Engerman and Sokoloff's work looks exclusively at the economies of the Americas and they find that the role of factor endowments has been underestimated in the previous literature. Easterly extends this hypothesis to the entire globe to see if it holds when examining the relationship between inequality and development among nations of all regions. Based on the work of Engerman and Sokoloff, as well as addressing the reverse causality of inequality and development, Easterly uses the ratio of land suitable for growing wheat to land suitable for growing sugarcane as an instrument for inequality. He uses the Engerman and Sokoloff idea of initial factor endowment as an exogenous determinant of inequality as justification for the use of this instrument. Figure 3 shows

that Easterly's wheat-sugar ratio does indeed maintain a negative relationship with inequality. Figures 2 and 3 together highlight the Engerman and Sokoloff hypothesis that initial factor endowments predict inequality (Figure 3) and inequality predicts underdevelopment (Figure 2).

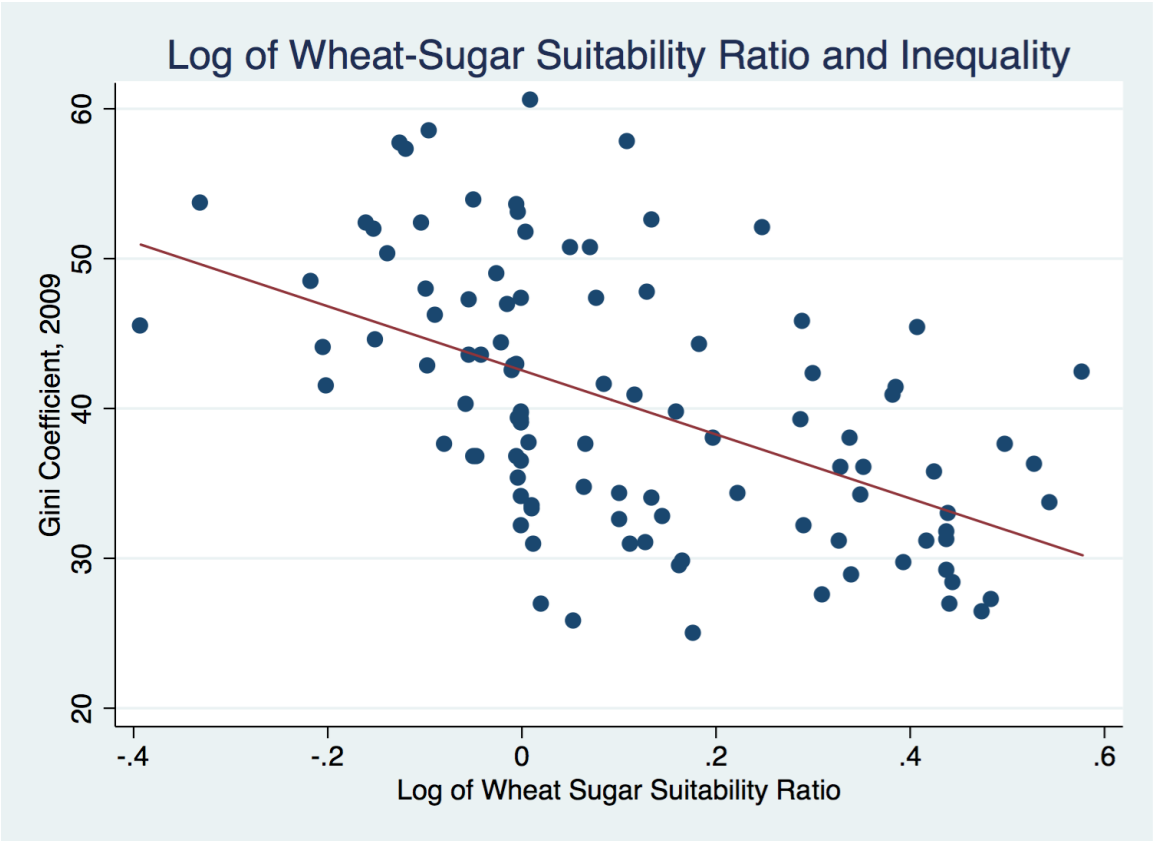

Figure 3

3. Data and Methodology

Table 1 shows summary statistics for the variables used in my main regressions and in the robustness checks. Most data come from the Weil dataset with three exceptions. The wheat-sugar ratio comes from Easterly (2007), the percent of land in the tropics comes from the Harvard Center for International Development's website which hosts the datasets used by Sachs and Warner (1997), and the legal origin data come from the World Bank's Global Development Network Growth Database. Weil compiles his data from various sources including GDP data from the Penn World Tables, secondary school enrollment rates from the World Bank's World Development Indicators, and measures of institutional strength from the World Bank, which are based on the indexes created by Kaufmann, Kraay, and Zoido-Lobaton (2000). Weil's dataset has a number of missing observations, which I remedy by going to his original sources to obtain the missing values. After filling in the missing observations, I end up with a total of 105 countries for my analysis using the Gini coefficient as the measure of inequality and 104 countries when using the income share of the top 20% as the inequality measure. Lastly, I use the log of the World Bank's measure of natural capital in place of Easterly's commodity exporting dummy.

Table 1
Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Log of Real GDP Per Capita (2005 International Dollars)	105	8.71	1.24	5.91	10.82
Gini Coefficient	105	40.15	8.61	25.00	60.50
Income Share of Top 20 Percent	104	47.16	7.09	35.50	65.00
Wheat-Sugar Land Ratio	105	0.11	0.21	-0.39	0.58
Ethnic Fractionalization	101	0.43	0.25	0.01	0.93
Percentage of Land in Tropics	104	0.46	0.48	0.00	1.00
Natural Capital per Capita	94	8.82	0.88	7.00	11.41
British Legal Origin	29	–	–	–	–
French Legal Origin	43	–	–	–	–
Socialist Legal Origin	24	–	–	–	–
Other Legal Origin	9	–	–	–	–

Some comments about Easterly's approach to the inequality data are necessary to place the comparisons of his results with my results in the proper context. First, Easterly creates his own inequality measures by accounting for the different types of surveys that the various countries' inequality observations are based on in the WIDER dataset. He regresses the inequality measures on dummy variables for each of the different survey classifications and then uses the coefficients on these dummy variables to adjust the inequality measures. His motivation for adopting this strategy is an attempt to eliminate the average differences arising from the different survey methodology. Easterly also takes the average of all inequality measures for each country over the period 1960-98 in order to reduce the noise in the surveys on which the inequality measures are based. It would be helpful if Easterly provided summary statistics and a more thorough discussion of his methodology in his paper to facilitate replication but, unfortunately, he does not. I do not

do any adjustments to the inequality measures from the Weil dataset, which are the most recent figure available in the 2000s from the World Bank.

Easterly also makes the claim that the standard World Bank region classifications are endogenous due to grouping by income levels in some cases. To address this, Easterly creates four region dummies that correspond to actual geographic regions as opposed to World Bank regions. In doing so, he places Japan, Australia, New Zealand, and low income South Asia into an East and South Asia and Pacific region. He also puts Western Europe back into the Europe and Central Asia region and the United States and Canada into a Western Hemisphere region with Latin America and the Caribbean. Lastly, he combines the North Africa and Middle East region with sub-Saharan Africa, which is normally separated in World Bank regional designations.

Easterly constructs his wheat-sugar ratio measure using data from the United Nation's Food and Agriculture Organization (FAO) as follows:

$$Wheat/Sugar\ Ratio = \log\left[\left(\frac{(1 + share\ of\ land\ suitable\ for\ wheat)}{(1 + share\ of\ land\ suitable\ for\ sugarcane)}\right)\right]$$

Easterly concedes that it is possible his wheat-sugar ratio instrument is acting as an inverse proxy for tropical location, but shows that there is still quite a bit of variation in the wheat-sugar ratio in both the tropical and non-tropical countries as displayed in Figure 4. He also makes the distinction that the wheat-sugar ratio is capturing the potential or suitability of a country's land to produce the crops and is thus exogenous, as compared to data on actual wheat and sugar production, which would be endogenous.

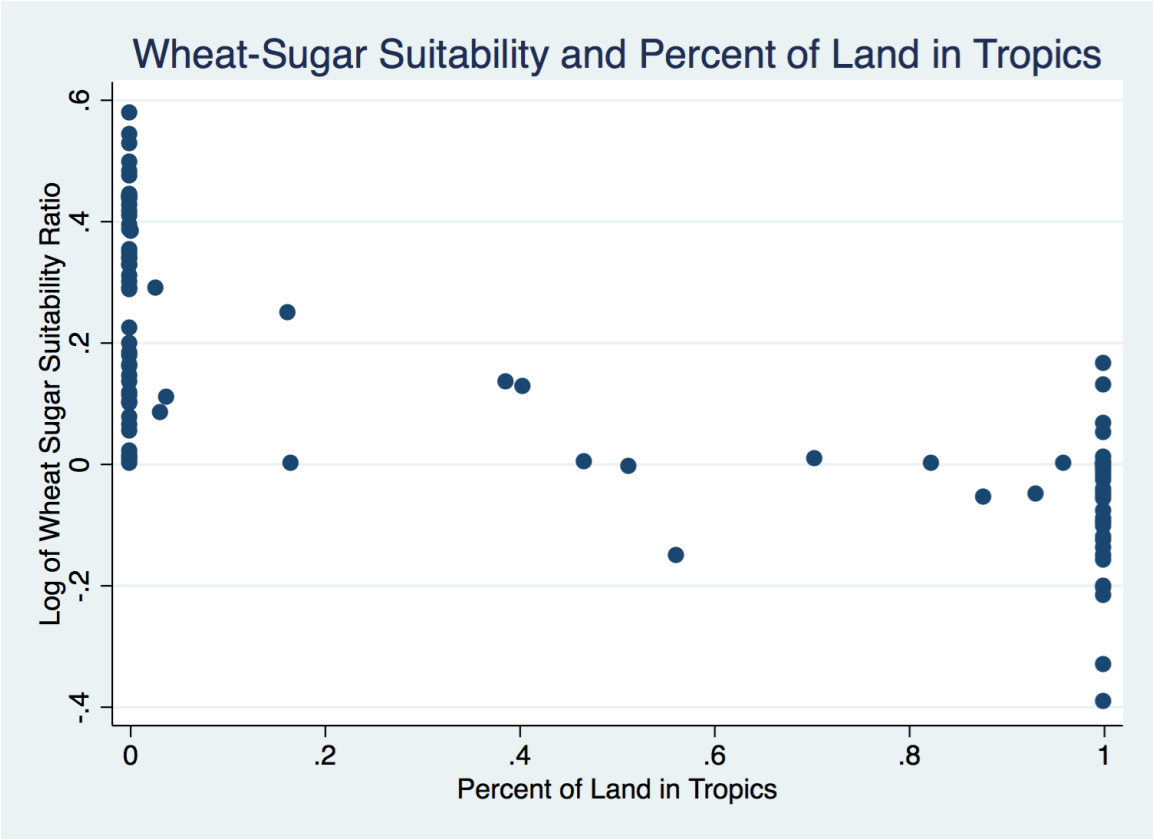

Figure 4

Following Easterly's methodology, I use two-stage least squares to test the null hypothesis that inequality has no effect on development using two different measures of inequality: the Gini coefficient and the share of income accruing to the top quintile. Using two-stage least squares allows for instrumenting the inequality measures with the wheat-sugar ratio to eliminate the problem of reverse causality. For an instrument to be valid it must satisfy two conditions: relevance and exogeneity. To be relevant, an instrument must capture some of the variation in the inequality variable of interest. The exogeneity condition is satisfied only if the instrument has no other effect on development other than through the inequality channel. Like Easterly, I report first stage F-statistics to test the strength of the instrument and conduct an overidentification test to test the exogeneity of the instrument.

4. Empirical Results

Table 2 shows first stage OLS regressions for the inequality measures on the wheat-sugar ratio. Estimating these first stage regressions using the Weil dataset confirms Easterly's findings that the first stage F-statistics are well above the rule of thumb of 10 and, therefore, the instrument is relevant.

Table 2
First Stage Regressions

	Easterly	Patrick	Easterly	Patrick
Dependent Variables	Gini		Share of Income Accruing to Top Quintile	
Wheat-Sugar Ratio	-18.328	-21.373	-19.133	-18.270
	(5.59)**	(7.39)**	(6.39)**	(7.89)**
Constant	44.555	42.545	49.275	49.178
	(48.26)**	(52.1)**	(61.75)**	(74.7)**
Observations	118	105	114	105
F-statistic	23.64	54.6	30.86	62.23
R-squared	0.17	0.27	0.22	0.30

Robust t-statistics in parentheses
** significant at 1%

As shown in Tables 3 and 4, my OLS and IV results are quite close to Easterly's results in magnitude and are significant at the one percent level. However, it is important to note that the first stage F-statistics on the excluded instrument fall below the rule of thumb of 10 when the regional dummies are included, indicating weak instruments. Easterly also saw the first stage F-statistics drop below 10, but points out that the coefficients on the inequality measures are still significant at the 5% level. While Easterly's first stage F-statistics for the Gini and top quintile income share drop to 8.8 and 9.1, respectively, the first stage F-statistics in my regressions that include the regional dummies experience a larger drop and fall to 5.7 and 6.5, respectively. This is the first

chink in the armor of the validity of Easterly's wheat-sugar ratio instrument and could indicate that Easterly's instrument is simply capturing some of the variation in GDP per capita that is explained by the geographical location of the country. I will revisit this issue in greater detail when comparing the results of Easterly's robustness checks with my own, as well as the results of an overidentification test.

Table 3

Regression Results Using Log of GDP Per Capita as the Dependent Variable and Gini

	OLS		IV		IV excluding Americas		IV	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Gini	-0.040	-0.044	-0.121	-0.138	-0.15	-0.244	-0.126	-0.201
	(4.27)	(3.61)**	(4.45)**	(5.47)**	(3.60)**	(5.66)**	(2.43)*	(2.27)*
East and South Asia and Pacific							12.54	16.38
							(6.28)**	(4.60)**
Americas							13.926	18.97
							(5.83)**	(4.32)**
Europe and Central Asia							13.349	16.39
							(7.03)**	(5.59)**
Middle East and Africa							13.053	16.03
							(5.44)**	(4.18)**
Observations	107	105	97	105	74	84	97	105
R-squared	0.13	0.09						
F-statistics from first stage			21.2	54.6	15.4	35.6	8.8	5.7

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions except for those with regional dummies

Table 4

Regression Results Using Log of GDP Per Capita as the Dependent Variable and Income Share Accruing to the Top Quintile

	OLS		IV		IV excluding Americas		IV	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Income Share of Top 20 Percent	-0.043	-0.053	-0.127	-0.161	-0.157	-0.270	-0.143	-0.226
	(4.56)**	(3.47)**	(4.30)**	(5.82)**	(3.53)**	(6.22)**	(2.37)*	(2.40)*
East and South Asia and Pacific							14.068	19.248
							(5.24)**	(4.14)**
Americas							15.428	21.273
							(4.98)**	(4.16)**
Europe and Central Asia							14.677	19.023
							(5.86)**	(4.91)**
Middle East and Africa							14.499	18.561
							(4.74)**	(3.97)**
Observations	106	105	96	105	73	84	96	105
R-squared	0.14							
F-statistics from first stage			25.6	62.2	18.9	44.5	9.1	6.5

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions except for those with regional dummies

After presenting the estimates of his main regressions, Easterly proceeds with a series of robustness checks to control for other determinants of development that have been called out in the literature as possibly affecting growth. Easterly incorporates measures of ethnic fractionalization, legal origin, the share of tropical land, and the resource curse one at a time to determine if his results change when controlling for these other determinants of development. In doing so, he assumes each one is exogenous while running instrumental variables regressions on the two inequality measures instrumented with the wheat-sugar ratio.

Table 4

Robustness Checks: Effect on Log of GDP Per Capita Controlling for Ethnic Fractionalization

	Gini		Income Share of Top Quintile		OLS omitting inequality measures	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Inequality Measure	-0.10	-0.11	-0.10	-0.12		
	(3.10)**	(3.85)**	(3.00)**	(4.08)**		
Ethnic Fractionalization	-0.78	-1.60	-1.13	-1.78	-2.02	-2.77
	(1.31)	(2.72)**	(2.34)*	(3.21)**	(6.56)**	(6.92)**
Observations	97	101	96	101	106	101
R-squared					0.26	0.31
F-statistics from first stage	14.5	32.7	19.28	40.4		

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions except for those with regional dummies

The first robustness check involves controlling for the degree of ethnic fractionalization in a country, which has been shown to have a negative impact on development (Easterly and Levine 1997). My results match Easterly's very closely and indicate that the instrument maintains its relevance and the effect of inequality on development remains when controlling for ethnic fractionalization. Following Easterly, I also run an OLS regression on the log of GDP per capita on ethnic fractionalization omitting the inequality measure, which shows that the magnitude of the coefficient on ethnic fractionalization drops when controlling for inequality.

Table 5

Robustness Checks: Effect on Log of GDP Per Capita Controlling for Legal Origin

	Gini		Income Share of Top Quintile		OLS omitting inequality measures	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Inequality Measure	-0.20	-0.18	-0.19	-0.20		
	(2.99)**	(4.00)**	(3.74)**	(4.38)**		
British	0.66	0.45	0.02	0.33	-1.35	-1.88
	(0.78)	(0.64)	(0.03)	(0.52)	(4.94)**	(6.38)**
French	0.71	0.33	0.22	0.08	-1.39	-1.89
	(1.01)	(0.53)	(0.49)	(0.17)	(5.56)**	(7.32)**
Socialist	-1.44	-0.50	-1.86	-0.61	-1.35	-1.37
	(2.43)*	(1.40)	(3.86)**	(2.07)*	(5.00)**	(5.84)**
Observations	96	105	95	105	104	105
R-squared					0.13	0.19
F-statistics from first stage for excluded instrument	7.87	19.8	14.51	23.4		

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions

Like Easterly, I include dummy variables for British, French, and Socialist legal origins, with German or Scandinavian legal origins as the omitted categories. It has been shown in previous literature that legal origin has a significant impact on development (Levine, 2005). My results when controlling for legal origin also match closely to Easterly's and maintain a statistically significant effect of inequality on development. Again, the magnitude of the coefficient on the legal origin dummy variables is reduced when controlling for inequality.

Table 6
Robustness Checks: Effect on Log of GDP Per Capita Controlling for Share of Tropical Land

	Gini		Income Share of Top Quintile		OLS omitting inequality measures	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Inequality Measure	-0.11	-0.03	-0.10	-0.03		
	(2.38)*	(0.54)	(2.58)*	(0.55)		
Share of Tropical Land	-0.24	-1.31	-0.42	-1.35	-0.94	-1.62
	(0.54)	(2.02)*	(1.18)	(2.31)*	(4.37)**	(8.13)**
Observations	95	104	95	104	100	104
R-squared					0.15	0.39
F-statistics from first stage	10.5	5.43	16.74	7.45		

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions

Controlling for the share of tropical land is one important robustness check where my results do not align with Easterly's findings. This check is especially important due to the concern that the wheat-sugar ratio is simply a proxy for tropical land. Easterly's results maintain statistical significance for the inequality measures, while the Sachs share of tropical land variable is insignificant in his regressions. However, when I include the measure of share of tropical land in my regressions the coefficient on inequality becomes insignificant and the Sachs tropical land measure is significant. Also, my first stage F-statistics fall below the threshold of 10, which indicate the instrument is weak. This is now the second chink in the armor of the wheat-sugar ratio instrument.

Table 7

Robustness Checks: Effect on Log of GDP Per Capita Controlling for Log of Natural Capital

	Gini		Income Share of Top Quintile		OLS omitting inequality measures	
	Easterly	Patrick	Easterly	Patrick	Easterly	Patrick
Inequality Measure	-0.10	-0.11	-0.10	-0.13		
	(4.09)**	(4.94)**	(3.83)**	(5.23)		
Easterly's Commodity Export Dummy	-0.78		-0.73		-1.08	
	(2.98)**		(2.83)**		(5.92)**	
Natural Capital		0.86		0.91		1.03
		(5.99)**		(6.60)**		(10.67)**
Observations	97	94	96	94	107	94
R-squared					0.21	0.51
F-statistics from first stage	24.91	42.12	25.64	47.89		

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions

The last of Easterly's robustness checks is to include a commodity export dummy to control for what Sachs and Warner (1997) call the resource curse. I was unable to find Easterly's commodity export dummy so I use the World Bank's natural capital measure found in the Weil database. In this test, I estimate similar magnitudes and levels of significance as Easterly and the relationship between inequality and development holds.

Table 8
Overidentification Test: Effect on Log GDP Per Capita with Tropics Instrument in Addition to the Wheat-Sugar Ratio

	Gini		Income Share of Top Quintile	
	Easterly	Patrick	Easterly	Patrick
Inequality Measure	-0.123	-0.155	-0.128	0.182
	(3.91)**	(5.04)**	(3.99)**	(5.07)**
Overidentification tests p-values:				
Sargan	0.6142	0.1594	0.2936	0.1033
Basmann	0.6194	0.1615	0.2985	0.1039
Observations	95	104	95	104

Robust t-statistics in parentheses (* significant at 5% level; **significant at 1% level)
Constants (not shown) included in all regressions

The final piece of evidence Easterly uses to support the validity of his instrument is an overidentification test that includes the Sachs share of tropical land variable as an additional instrument. The null hypothesis in these tests is that all instruments are exogenous. As shown in Table 8, Easterly's tests yield high p-values and fail to reject the null that the instruments are exogenous. The p-values for my overidentification tests, however, are much lower than Easterly's. The results of my test on the regression using the income share of the top 20% come close to rejecting the null hypothesis of exogenous instruments at the 10% level of significance. While this may not be the third strike against the validity of Easterly's wheat-sugar ratio instrument, it adds to the uncertainty concerning the validity of his instrument, especially in light of my inability to replicate his results in key robustness checks such as adding the regional dummies and the Sachs share of tropical variable as an additional regressor.

5. Conclusion

The question of inequality, its determinants, and its impact on development outcomes is not one that will be resolved anytime soon. The difficulty in obtaining high quality measurements of inequality that are comparable across nations is only the first problem on a substantial list of obstacles to be overcome in order to truly illuminate how inequality affects GDP per capita and other measures of development. A major concern is the endogeneity of the relationship and, in light of the evidence provided by my results it appears as if researchers should press on in the search for valid instruments.

My paper attempts to confirm the validity of Easterly's instrument using updated data but finds compelling evidence that the ratio of land suitable for wheat to land suitable for sugarcane is not a valid instrument. While I match many of his estimates quite closely, I am unable to match his results for key robustness checks concerning region and share of tropical land. My overidentification test is also less conclusive than Easterly's test. It would be very helpful if Easterly would provide summary statistics and a detailed description of the transformations he is making on the inequality data. However, given that many of my estimates match his quite closely, it appears as if data issues may be less important than the questionable validity of his wheat-sugar instrument. Future research should use Easterly's instrument with other datasets, as well as different measures of inequality such as the share of income of the top 10% and top 1%.

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