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Fiscal Consolidation and Income Inequality in Latin America and the Caribbean

RESEARCH

TAKUJI KOMATSUZAKI

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ABSTRACT

This paper estimates the effects of past fiscal consolidations in Latin America and the Caribbean (LAC) on income inequality. For the 13 LAC countries with fiscal consolidation episodes identified by the narrative approach, one percent of GDP fiscal consolidation increases the disposable Gini coefficient by 0.12 percentage point on average in five years. The size of the effect tends to be larger for tax-based consolidations and for non-commodity exporters but broadly similar during booms and slumps.

CORRESPONDING AUTHOR:
Takuji Komatsuzaki
International Monetary Fund, US
tkomatsuzaki@imf.org

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I. INTRODUCTION

The economic fallout from the COVID-19 pandemic is having significant consequences for fiscal positions in the Latin America and the Caribbean (LAC) region. While the short term focus should be on allocating necessary resources to combat the pandemic and underpinning the recovery through fiscal stimulus, policy should focus on rebuilding fiscal space over the medium term, when the pandemic is under control (IMF 2020). At the same time, income inequality in LAC remains the highest of all regions, even after the significant improvement during the commodity boom in 2000–2014 (IMF 2017). It is important that the fiscal consolidation does not lead to an excessive increase in income inequality, which may make the consolidation socially undesirable or unsustainable even if it improves the fiscal position in the short term. In this context, studying the effect of past fiscal consolidations in Latin America and the Caribbean on income inequality provides a useful benchmark and lessons for future fiscal consolidations. Specific questions include: Do fiscal consolidations in the LAC have effects on inequality? If they do, does it matter how the consolidation is implemented? Is there heterogeneity within the region?

While the literature has established that fiscal consolidation tends to increase income inequality for advanced economies (AE), with especially strong effects when the consolidation is spending-based (Ball et al. 2013; Agnello and Sousa 2014; Furceri, Jalles, and Loungani 2015; Woo et al. 2017), there is no guarantee that this relationship is the same in the LAC. First, transmission mechanism from fiscal consolidation to market income distribution may not be identical. The effect of fiscal consolidation on market income distribution crucially depends on which segments of the population are affected more, and it may not be the same segments between AE and LAC. Second, the role of the government's income redistribution may be different. The size of the government is generally smaller in LAC and fiscal redistribution is much less extensive than in AE––about three percent of GDP in 2015 compared to almost 17 percent in AE––as tax systems are more reliant on indirect taxes which tend to be more regressive, and spending on transfers is smaller and less targeted (Bastagli, Coady, and Gupta 2015).

This paper provides a first step toward analyzing the effect of fiscal consolidation on income inequality in LAC, where evidence to date has been limited. To do so, we make use of a recent database based on the narrative approach, which identifies fiscal shocks orthogonal to current and prospective economic conditions by examining policy intentions (David and Leigh 2018). We employ the local projections method (Jordá 2005) to estimate the dynamic response of market and disposable (post-tax and transfer) income distributions following the fiscal consolidation shocks. We contrast LAC and AE results where relevant to highlight similarities and differences.

We find that income inequality increases after fiscal consolidation in LAC, similar to results in AE. Fiscal consolidation leads to an increase in disposable Gini coefficient of 0.12 on average for 13 LAC countries, slightly larger than the estimate for AE using the same methodology. Income inequality increases whether the consolidation is tax-based or expenditure-based with respect to point estimates, also in line with results in AE sample. Unlike AE sample, however, tax-based consolidations clearly exhibit larger effects than expenditure-based consolidations, as the latter is not statistically significant for LAC. A potential explanation for the difference between AE and LAC in expenditure-based consolidations is that the expenditure consolidation in LAC is concentrated on cuts in capital expenditure and, to a lesser extent, in goods and services spending, while spending on social benefits has been protected. Comparing commodity exporters and non-commodity exporters, we find that the increase in income inequality is larger for the latter. We do not find a discernible difference between fiscal consolidation during booms and slumps.

The main results are robust to alternative specifications and data sources. Among the robustness checks is the use of income inequality data from Socio-Economic Database for Latin America and the Caribbean (SEDLAC), given that the Standardized World Income Database (SWIID) that we use for baseline estimation due to its broad cross-country and historical coverage has been subject to criticism. We also perform robustness checks on different vintages of income inequality data, different shock identification (forecast error), different lags, and alternative specification of tax-expenditure shock breakdown. Main conclusions from the baseline specification hold for these robustness checks.

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The rest of the paper is organized as follows. Section II reviews the existing literature. Section III describes the data and econometric methods. Section IV describes baseline results while section V breaks down the sample into several subsamples and makes comparisons. Section VI validates the baseline results by using SEDLAC. Section VII performs other robustness checks and section VIII concludes.

II. LITERATURE REVIEW

This paper is related to a series of papers that investigate the effects of fiscal consolidation on income inequality in AE, including Agnello and Sousa (2014), Ball et al. (2013), Furceri et al. (2015), Heimburger (2020), and Woo et al. (2017). All of them use fiscal consolidation episodes identified by the narrative approach and conclude that the fiscal consolidations lead to an increase in income inequality overall. They also show that expenditure-based consolidations tend to increase inequality more than tax-based fiscal consolidations, although tax-based consolidation still leads to an increase in income inequality for studies that use local projection methods (Ball et al. 2013; Furceri et al. 2015; Heimburger 2020) while the effect is negligible and not statistically significant for studies that use dynamic panel regressions (Agnello and Sousa 2014; Woo et al. 2017).

Literature on the effect of fiscal consolidations on income inequality outside of AE is thin. Furceri et al. (2018) identify expenditure shocks by measuring forecast errors for 103 developing countries and finds that fiscal consolidations lead to a long-lasting increase in income inequality while the opposite is true for fiscal expansions. Azevedo et al. (2014) estimate the effects of fiscal adjustments at the sub-national government level in Brazil on income inequality. They find that a tighter fiscal stance at the sub-national level is not associated with a deterioration in inequality measures, and that neither revenue nor expenditure-based consolidation is associated with an increase in income inequality. Fabrizio and Flamini (2015) document stylized facts that large fiscal adjustments in 19 developing economies did not lead to an increase in disposable income inequality on average.

A main transmission channel from fiscal consolidation to income inequality is through a decrease in output, an increase in unemployment rate, and downward pressures in the real wage. Therefore, the dynamic relationship between business cycle and income inequality is relevant. Krueger et al. (2010) and OECD (2015) report that labor income inequality is countercyclical for AE. Hacibedel et al. (2019) find that income inequality is countercyclical for developing countries as well.

III. DATA AND ECONOMETRIC METHODS

We use the local projection method developed by Jordà (2005) to estimate the dynamic impulse response function. This is a flexible method that is robust to misspecification. Baseline specification is the following:

$$Gini_{c,t+h} - Gini_{c,t-1} = \alpha^h{}_c + \gamma^h{}_t + \beta^h \sum_{s=t}^{t+h} shock_{c,s} + \delta^h X_{c,t} + \epsilon_{c,t} \forall h \quad (1)$$

where $Gini_{c,t+h}$ is country c's Gini coefficient h year after the starting year of the fiscal consolidation $shock_{c,t}$, is the fiscal consolidation shock $X_{c,t}$, is a set of control variables that includes two lags of the change in Gini coefficient, two lags of fiscal consolidation shocks, and contemporaneous growth rate of the commodity export values and its two lags, given that commodity cycle have affected inequality in Latin America (IMF (2018)).[1] $\alpha^h{}_c$ and $\gamma^h{}_t$ denote country and year fixed effects, respectively. Confidence intervals are constructed using Driscoll-Kraay standard errors that are robust to autocorrelation and cross-sectional dependence.

The coefficients β^h corresponds to our multiplier estimate of interest. Following Furceri et al. (2018) that adopts Ramey and Zubairy's (2018) concept of integral fiscal multiplier and defines integrated inequality multiplier, β^h defines size of change in Gini coefficients after h periods in response to one percent of GDP fiscal consolidation during the same h periods.

1 We also tried commodity terms of trade growth rate as an alternative control, but results were virtually the same.

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Fiscal consolidation shocks come from David and Leigh (2018), who construct a database of fiscal consolidation episodes in LAC using the narrative approach.[2] In the narrative approach, fiscal consolidation is identified by examining the policy intention described in contemporaneous policy documents and the size of fiscal consolidation is recorded in percent of GDP, distinguishing tax-based and expenditure-based measures. By focusing on policy intention rather than fiscal outcome, this approach avoids the biases that a more traditional approach that relies on the latter (cyclically adjusted primary balance, or CAPB) suffers from. Carrière-Swallow, David, and Leigh (2018) show that the CAPB would "identify" fiscal impulses when there are no apparent fiscal policy actions, due to incomplete adjustments for changes in revenues or expenditures that are endogenous to contemporaneous economic conditions. Recognizing this advantage, many recent papers use the narrative approach-based fiscal consolidation episodes to study the effects of fiscal consolidation on income inequality, as described in section II. David and Leigh (2018) identify 76 episodes of fiscal consolidation for 14 countries in LAC for 1989–2016, with a mean annual change of 0.9 percent of GDP, ranging from -0.9 to 4.1 percent of GDP. Out of the 14 countries, we use 13 countries, excluding Bolivia, as the 13-country sample is more representative of the region, given the peculiar circumstances under which fiscal consolidation took place in Bolivia (Annex II). In this paper, we also contrast our results for LAC with results from AE using the same empirical specification. For AE sample, narrative approach-based fiscal consolidation episodes are obtained from Devries et al. (2011) and Alesina et al. (2018).

Gini coefficients come from SWIID 8.1 (Solt 2020). Its large number of observations makes it a natural choice for cross-country regressions. Table 1 documents summary statistics for the SWIID 8.1 disposable Gini coefficient broken down by country. As shown in the table, sufficiently long time series are available for all countries, with relatively high levels of inequality for all countries and substantial heterogeneity in volatility.

Table 1 Country-by-Country Summary Statistics of Disposable Gini Coefficients.

Source: SWIID8.1.

	COUNT	MEAN	SD	MIN	MAX
ARG	57	39.6193	3.653151	35.2	46.3
BOL	28	48.21071	3.647763	42	53.1
BRA	58	50.31724	2.431384	45	54.2
CHL	50	46.64	1.402767	44.5	48.5
COL	49	50.66735	1.121269	47.7	52.1
CRI	57	42.65439	2.065885	39.6	46.3
DOM	31	46.09355	1.454404	43	48.2
ECU	31	46.9	2.814841	41.7	49.9
GTM	34	49.05588	2.146341	42.7	50.9
JAM	28	41.36786	.4269213	40.6	42.1
MEX	54	48.09074	2.443186	44.8	52.8
PER	46	51.02826	3.108102	44.1	53.4
PRY	28	47.27143	2.243486	42.6	50.7
URY	37	39.24865	1.700101	35.9	41.9

However, SWIID has clear limitations. In particular, the Gini coefficients reported in SWIID are not based on household surveys, as a multiple imputation method is used to generate country-year observations to broaden the data coverage even when there are no corresponding household surveys. Therefore, it has been subject to rather strong criticism by experts in the field; for instance,

2 The list of countries is: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Jamaica, Mexico, Paraguay, Peru, Uruguay. The full list of episodes is in Annex I.

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Jenkins (2015). We perform analyses using SEDLAC, a household survey-based database of income inequality in the LAC region, in section VI to validate our results from the SWIID. We also perform other robustness checks in section VII.

IV. BASELINE RESULTS

Fiscal consolidation leads to an increase in Gini coefficients. In particular, fiscal consolidations lead to an increase in disposable Gini coefficient of 0.12 on average for 13 LAC countries, (Figure 1).

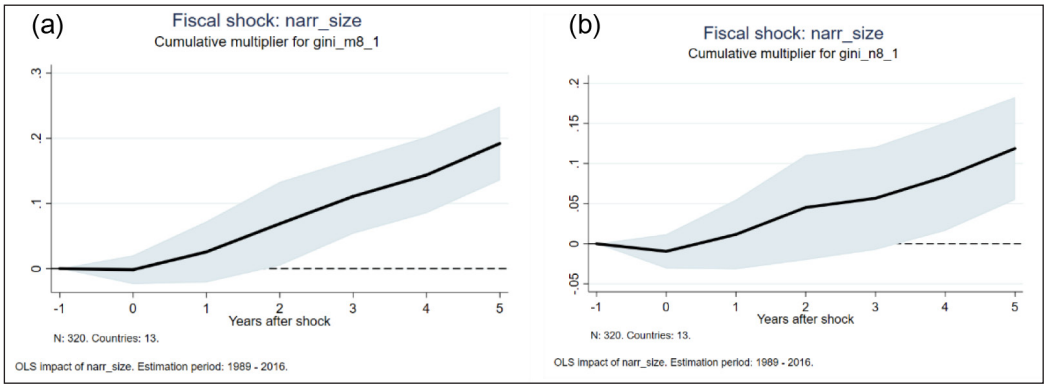

Figure 1 Results for LAC. **(a)** Gini market. **(b)** Gini disposable.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

Applying our specification to AE, we also find an increase in Gini coefficients following fiscal consolidation (Figure 2). While the magnitude of the increase in inequality is smaller than past studies, for example, Ball et al. (2013), the difference can be explained by differences in vintages of SWIID and regression specification (Annex III). Comparing Figures 1 and 2, we find that the magnitude is larger for LAC than for AE.

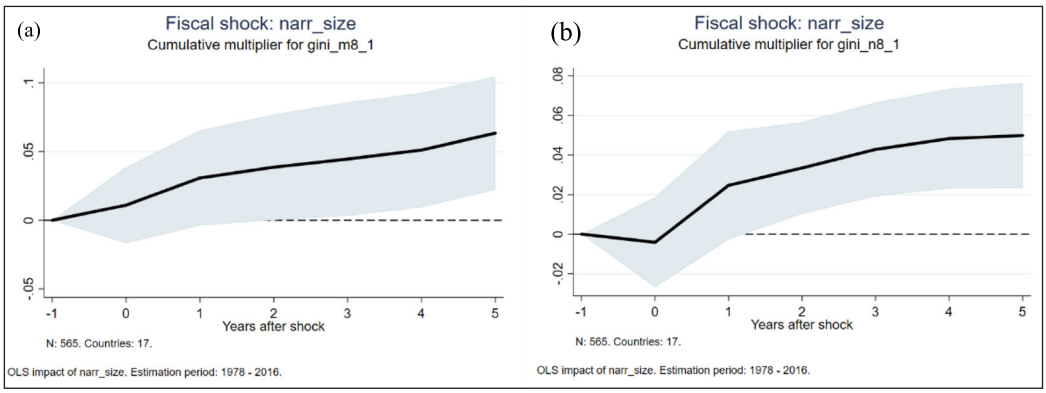

Figure 2 Results for AE. **(a)** Gini market. **(b)** Gini disposable.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

The comparison of Figure 1 (a) and (b) suggests that approximately 1/3 of the change in market Gini coefficient is offset by the change in fiscal redistribution. This relationship broadly holds for all of the breakdown below. Therefore, we focus on the disposable Gini coefficient in the rest of the paper, while underscoring that the main driver of the change is the change in market Gini coefficient with partial offset by the fiscal redistribution.

V. BREAKDOWN

A. TAX-BASED VS. EXPENDITURE-BASED CONSOLIDATION

Fiscal consolidations come from either tax increases or expenditure cuts. We examine whether there are differences between tax-side and expenditure-side measures by estimating the effects of tax increases and expenditure cuts separately. While both types of measures lead to an

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increase in income inequality in terms of point estimates, the magnitude is larger for tax-based consolidation, and the effect from expenditure-based consolidation is not statistically significant (Figure 3).

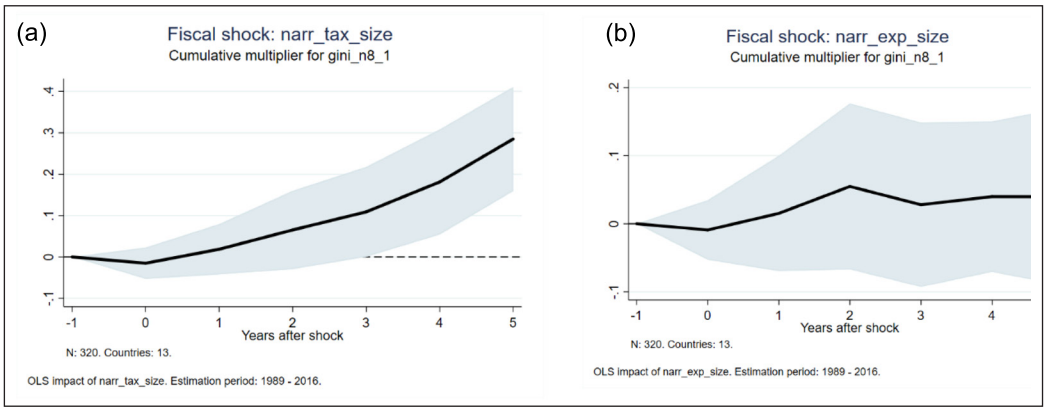

Figure 3 Tax-based vs. expenditure-based consolidation, LAC. **(a)** Gini disposable, tax-based. **(b)** Gini disposable, expenditure-based.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

In the AE sample, in contrast, both tax measures and expenditure measures lead to an increase in income inequality (Figure 4).

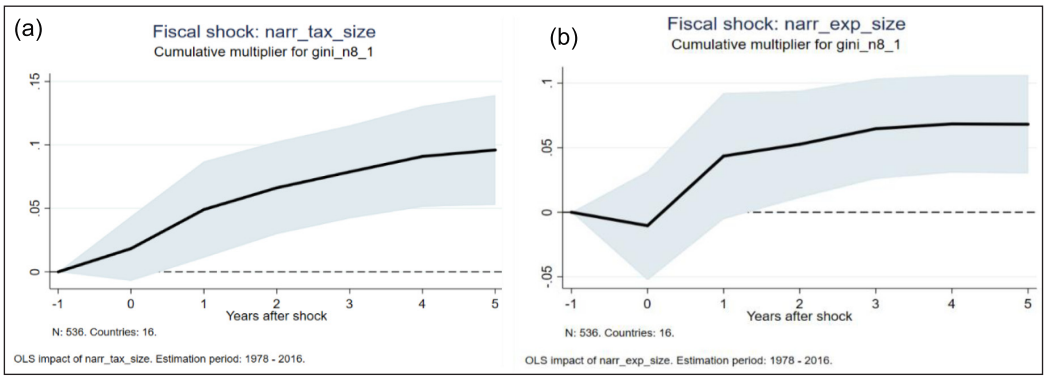

Figure 4 Tax-based vs. expenditure-based consolidation, AE. **(a)** Gini disposable, tax-based. **(b)** Gini disposable, expenditure-based.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

Source: World Economic Outlook Database and author calculations.

To seek an explanation for the differences between LAC and AE samples on the effects of expenditure-based consolidations, we decompose percent of GDP changes in general government expenditure for all expenditure-based consolidations where data are available (Figure 5).[3] While the size of decreases in total expenditure to GDP is similar between AE and LAC (0.8 percentage point vs. 0.7 percentage point, respectively), there are notable differences in the composition of the changes. In the AE sample, all expenditure categories have decreased. In contrast, the expenditure consolidation in LAC is concentrated on cuts in capital expenditure and, to a lesser extent, in goods and services spending, while spending in all other items, including social benefits have increased. This heavy reliance on cuts in public investment and public consumption and protection of social benefits in LAC may help account for the ambiguous effects of expenditure-based consolidation in LAC. Furceri et al. (2018) compares the effects of total government expenditure shocks, government consumption shocks, and public investment shocks, respectively, on income inequality, for a wide range of developing countries. They find that the effects of government consumption shocks, and public investment shocks, while negative on income inequality, are smaller than that of total expenditure shock and are not always statistically significant, likely because the latter includes transfers which have a direct income redistribution role.

3 Forty-nine out of 105 country-years in AE sample and 13 out of 18 country-years in LAC sample have sufficient data.

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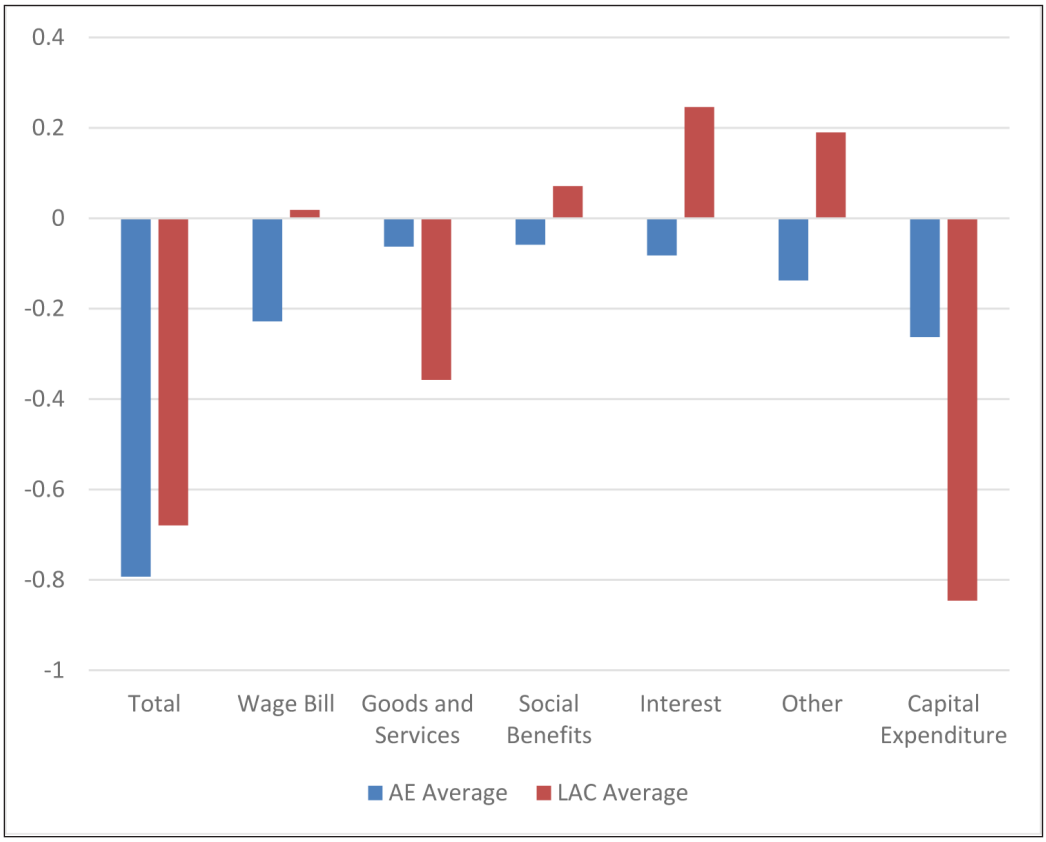

Figure 5 Annual changes in expenditures: Expenditure-based consolidation (Percent of GDP).

Source: World Economic Outlook Database and author calculations.

B. COMMODITY EXPORTERS V. NON-COMMODITY EXPORTERS

Given the different economic structures, it is possible that the impact of fiscal consolidation on income inequality could be different between commodity-exporters and non-commodity exporters. Following the classification in IMF (2018), we divide the sample countries into seven commodity exporters (Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru) and six non-commodity exporters (Costa Rica, Dominican Republic, Jamaica, Guatemala, Mexico, Uruguay). Because all South America other than Uruguay are included as commodity exporters while all Central America and Caribbean countries in the sample are non-commodity exporters, one can broadly interpret this classification as the comparison between South America on the one hand, and Central America and the Caribbean on the other hand.

Figure 6 shows that the size of increase in income inequality is larger for non-commodity exporters than for commodity exporters. While both subsamples show an increase in income inequality after fiscal consolidation, the size of the increase five years after the consolidation is substantially larger for non-commodity exporters than for commodity exporters (0.19 vs. 0.11). Moreover, the estimate is statistically significant only for the former.

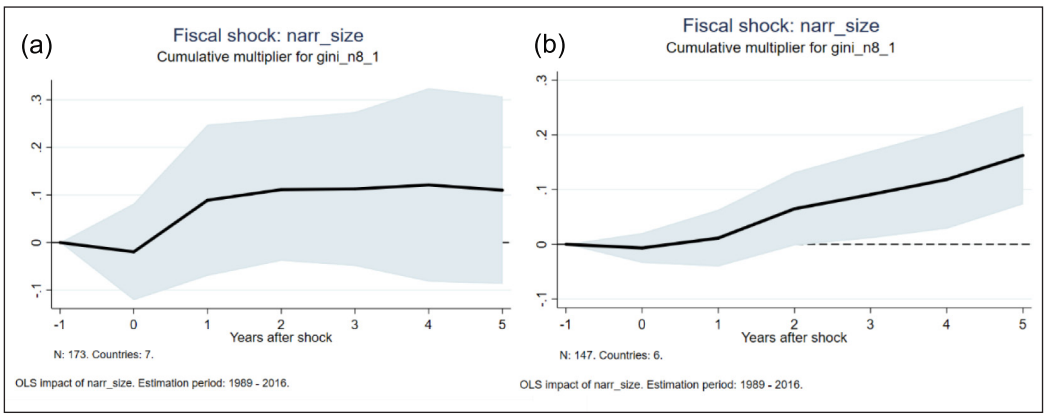

Figure 6 Commodity exporters vs. non-commodity exporters. **(a)** Gini disposable, commodity exporters. **(b)** Gini disposable, non-commodity exporters.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

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C. BOOM-SLUMP

If the effect of fiscal consolidation on inequality largely occurs through the changes in market inequality as output and unemployment are negatively affected, it is natural to conjecture that the effect on inequality could be different between booms and slumps—if the fiscal multipliers differ between booms and slumps. While there is an ongoing debate whether the fiscal multipliers differ between booms and busts, mainly using advanced economies sample (Auerbach and Gorodnichenko 2012), Ramey and Zubairy (2018), we address the question whether there are differences on the effects on inequality. First, we classify the observations into booms if the real GDP growth rate is over two percent, and slumps otherwise, following Heimberger (2020).[4]

For LAC, it is not clear whether there is a difference between booms and slumps (Figure 7). While point estimates suggest that income inequality increases more during slump times, the estimates are not statistically significant either for boom times or slump times. For AE, results in the short term are similar to Heimberger (2020), as the slump times lead to a higher increase in income inequality. In the medium term, however, the results are reversed as the size of increase in income inequality is slightly larger for boom times, contrary to the results in Heimberger (2020) (Figure 8).

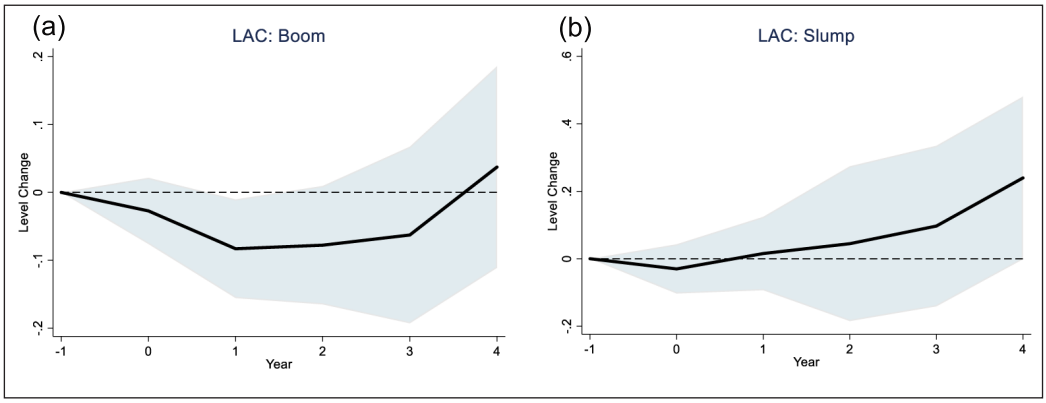

Figure 7 Boom vs. slump, LAC. **(a)** Gini disposable, boom. **(b)** Gini disposable, slump.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

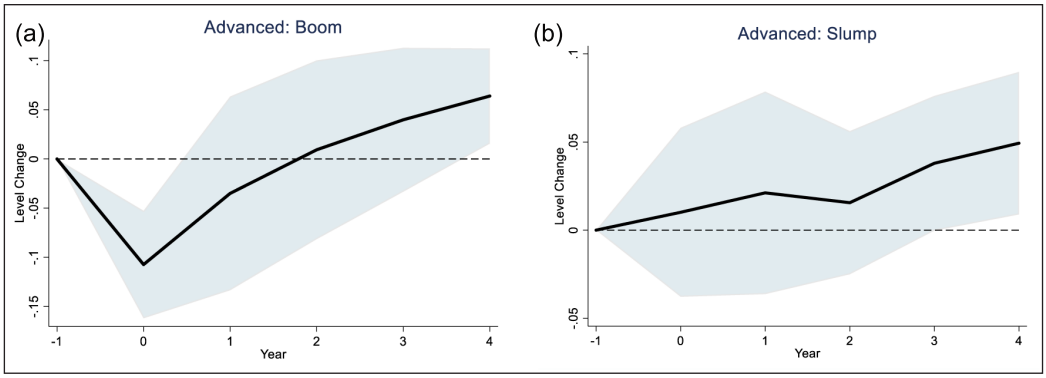

Figure 8 Boom vs. slump, AE. **(a)** Gini disposable, boom. **(b)** Gini disposable, slump.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

However, the two percent growth threshold may not be appropriate for LAC, consisting mostly of emerging markets. Therefore, we perform an additional analysis, drawing on the smooth-transition approach by Auerbach and Gorodnichenko (2012). Specifically, we modify the regression to:

$$Gini_{c,t+h} - Gini_{c,t-1} = \alpha^h{}_c + \gamma^h{}_t + \beta_1{}^h F(z_t)(\sum_{s=t}^{t+h} shock_{c,s} + \lambda_1^h X_{c,t}) + \beta_2{}^h (1 - F(z_t))(\sum_{s=t}^{t+h} shock_{c,s} + \delta_1{}^h X_{c,t}) + \epsilon_{c,t} \forall h$$

where $F(z_{c,t}) = \frac{\exp(-\gamma z_{c,t})}{1+\exp(-\gamma z_{c,t})}$. We set $\gamma = 1.5$, following Auerbach and Gorodnichenko (2012). Z is set as detrended log real GDP, using HP-filter and the smoothing parameter $\lambda = 10000$. β_1^h, β_2^h can

4 There is still a difference in classification, as Heimberger (2020) calculates the impulse response function using the start of consolidation as the dummy variable that signifies fiscal consolidation, while this paper uses cumulative fiscal consolidation as the fiscal consolidation shock.

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be interpreted as the size of changes in Gini coefficients in slumps and booms, respectively. Now the comparison shows that different dynamics between the short term and the medium term (Figure 9). While the income inequality increases in slump times and decrease in boom times for the first two years after the fiscal consolidation, in the medium term the order is reversed, and the fiscal consolidation in the boom times leads to an increase in income inequality, while it barely changes in the fiscal consolidation in slump times. Given some differences between the results using different methodologies, it is unclear overall whether there is a clear difference between the boom times and slump times.

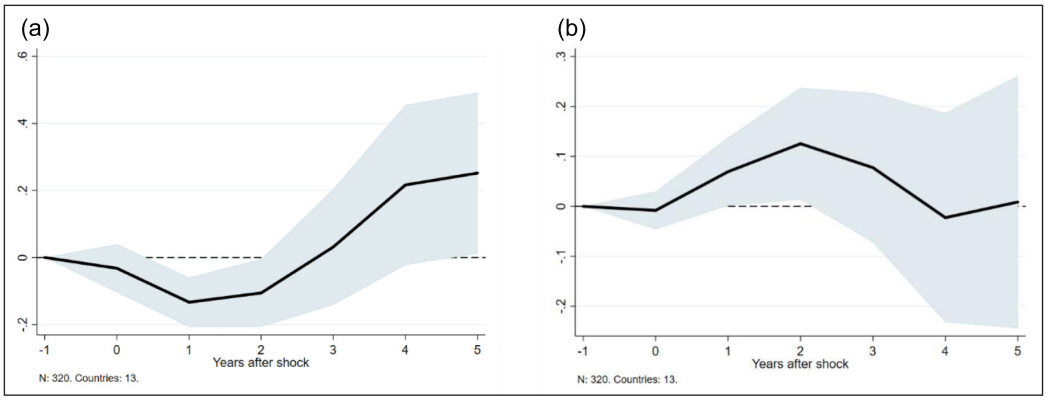

Figure 9 Boom vs. slump, LAC. **(a)** Gini disposable, boom. **(b)** Gini disposable, slump.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

VI. RESULTS USING SEDLAC DATASET

While SWIID has been used extensively in the literature due to its broad cross-country and historical coverage, it is not without criticism. Therefore, one needs to recognize this benefit-cost tradeoff and ensure that the substantive conclusions are robust to potential data problems (Jenkins 2015). Therefore, we check the robustness of our results by an alternative database that is based on household surveys: SEDLAC.

First, we compare SWIID 8.1 disposable Gini and SEDLAC Gini and make the following observations (Annex IV):

(i). The trend in income inequality is broadly consistent between the two databases, as they generally move in the same direction.

(ii). SWIID 8.1 time series is smoother than SEDLAC, reflecting its use of multiple imputation.

(iii). SWIID 8.1 covers longer time span and broader country coverage than SEDLAC. The latter does not have data for Jamaica and has shorter time series with many gaps for the other countries.

(iv). Level of Gini tends to be higher for SEDLAC than SWIID 8.1.

Replacing SWIID 8.1 disposable Gini by SEDLAC Gini leads to a significantly smaller sample size, and therefore the results are not directly comparable. However, qualitative conclusion from the baseline regression holds (Figures 10, 11): (i) fiscal consolidation leads to an increase in income equality after five years; and (ii) the size of increase is larger for tax-based consolidation, while the income inequality increase in the expenditure-based consolidation not statistically significant.

VII. OTHER ROBUSTNESS CHECKS

We perform various robustness checks by changing measurement of income inequality and fiscal shocks, number of lags, and classification methodology for tax-based versus expenditure-based breakdown. The main conclusion is robust to these robustness checks, while there is some difference in size of the effect, especially when different income inequality data are used.

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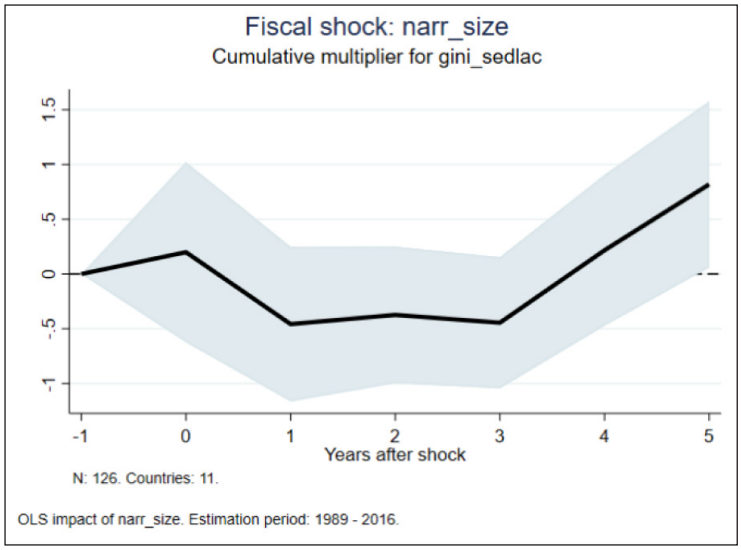

Figure 10 Results for LAC, using SEDLAC.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

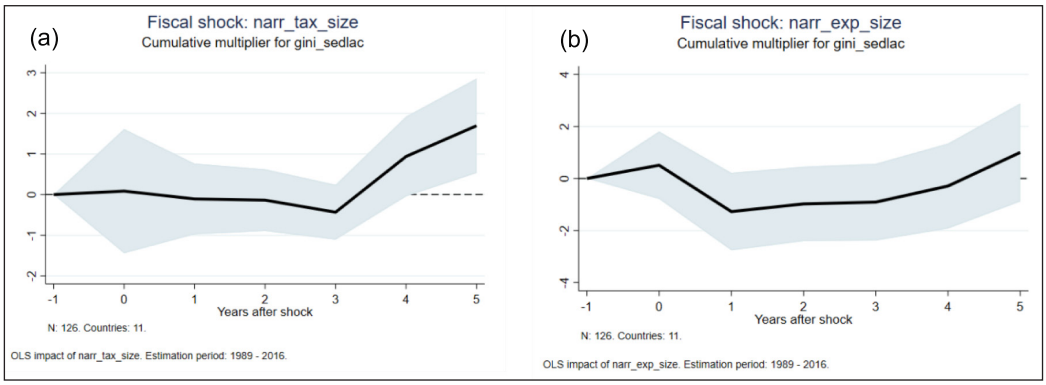

Figure 11 Tax-based vs. expenditure-based consolidation for LAC, using SEDLAC. **(a)** Gini disposable, tax-based. **(b)** Gini disposable, expenditure-based.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

A. OLDER VINTAGE OF SWIID

Past studies, such as Ball et al. (2013) and Heimberger (2020) used SWIID 5.1, an older version of the same income inequality database. The use of this older vintage of SWIID does not change the conclusion of the paper but makes the quantitative effects somewhat larger.[5] The increase in disposable Gini coefficient after five years is about 0.3 using SWIID 5.1 (Figure 12).

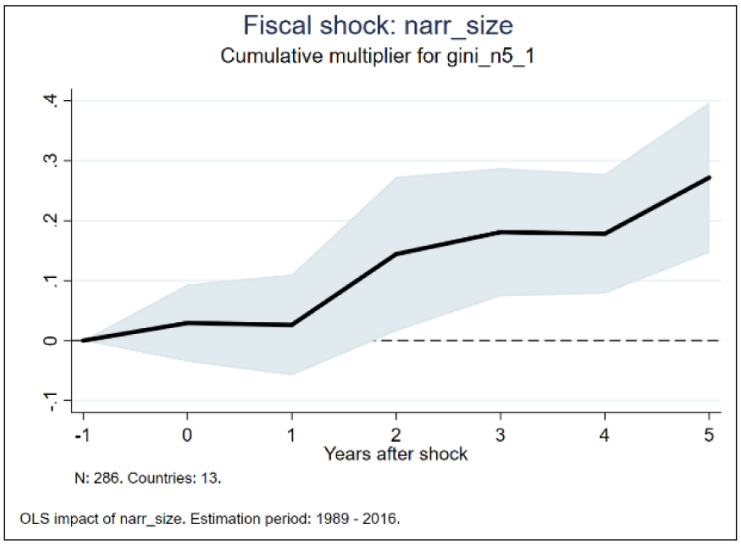

Figure 12 Results from a different version of SWIID. Gini disposable, SWIID 5.1

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

5 Results for the other exercises using different vintages of SWIID are available from the author upon request.

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B. FORECAST ERROR SHOCKS

Identification of fiscal consolidation by the narrative approach does not address the "fiscal foresight" problem (Leeper et al. 2013). As an alternative measure of fiscal shocks, we use forecast error shock following Furceri et al. (2018) and see whether results change in the case of expenditure shock.[6] Forecast error is obtained as the following:

$$FE_{i,t} = \left(\Delta G_{i,t} - \Delta G^{E}_{i,t}\right)\frac{\overline{G}}{\overline{Y}}$$

Where $\Delta G_{i,t}$ and $\Delta G^{E}_{i,t}$ are actual growth rate of government expenditure and its projected growth rate in the same year's October WEO, respectively. The forecast error in terms of differential of the growth rate is subsequently multiplied by the average expenditure-to-GDP ratio to express the shock in percent of GDP.

When the narrative expenditure shocks are replaced by the forecast error expenditure shocks in our sample, income inequality increases, consistent with the baseline results (Figure 13). In terms of size, point estimates on the five-year increases in the size of inequality increases from 0.12 to 0.15 percentage point. While the direction of change is consistent with results in Furceri et al. (2018), the size of change is smaller. Potential explanations could include differences in vintages of SWIID, country coverage, and measurement in the changes of Gini coefficients.

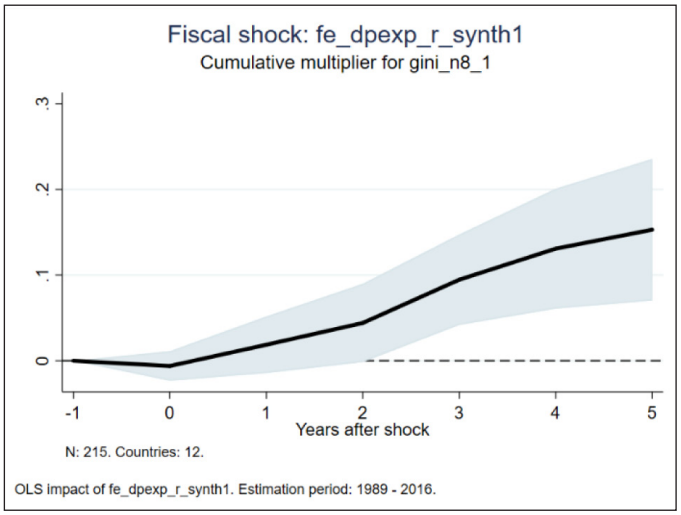

Figure 13 FE forecast errors. Gini disposable, total government expenditure.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

C. ALTERNATIVE SPECIFICATION FOR TAX-EXPENDITURE BREAKDOWN

There is a concern that the estimates on the tax-based consolidation and expenditure-based consolidation are biased because fiscal consolidations often are packages that involve both tax and expenditure measures. To address this concern, we use an alternative definition of tax-based and expenditure-based consolidation. In particular, fiscal consolidation episodes are classified into tax-based and expenditure-based depending on whether there is more tax content or expenditure content in any particular year.

We assess the differential impact of spending-based versus tax-based consolidations by estimating the following regressions. TB and SB are indicator variables that is equal to 1 when tax-based consolidation packages and spending-based packages are taking place, respectively, and zero otherwise. The vector of control variables includes the commodity export price and its lags, as

6 It is difficult to identify forecast errors on the revenue side, as revenues are not under the control of the government but are affected by the business cycle conditions, and therefore the forecast errors could include errors due to both policy changes and the change in the state of the economy not foreseen at the time forecast was made. This makes the forecast errors correlated with the state of the economy and not satisfying the exogeneity assumption.

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well as two lags of real GDP growth and two lags of the narrative consolidation shocks, irrespective of whether they were tax-based or spending-based.

$$Gini_{i,t+h} - Gini_{i,t-1} = \alpha_i^h + \gamma_t^h + \left(\beta_E^h SB_{i,t} + \beta_T^h TB_{i,t}\right)\left[\sum_{s=t}^{t+h} shock_{i,s}\right] + \gamma X_{i,t} + \epsilon_{i,t+h}$$

Baseline results broadly hold for both AE and LAC, as fiscal consolidation increases income inequality for both AE and LAC. However, results for LAC are now not statistically significant (Figure 14, 15).

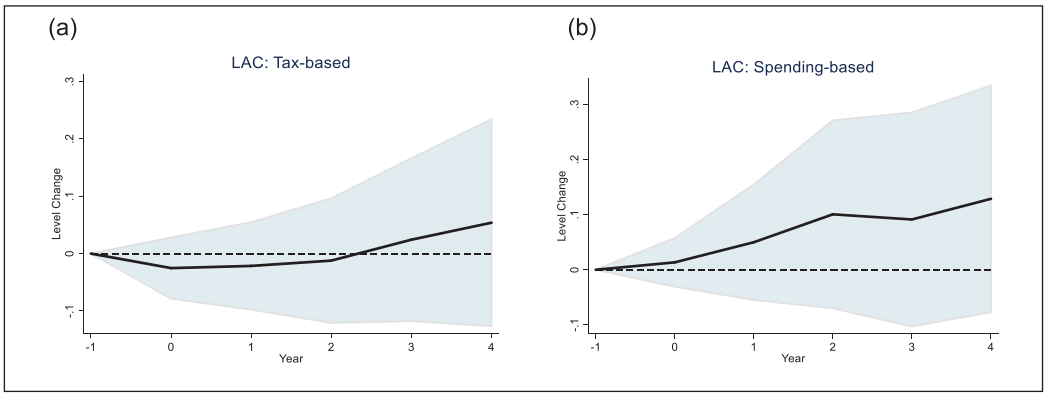

Figure 14 Tax vs. expenditure, LAC. **(a)** Gini disposable, tax-based. **(b)** Gini disposable, expenditure-based.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

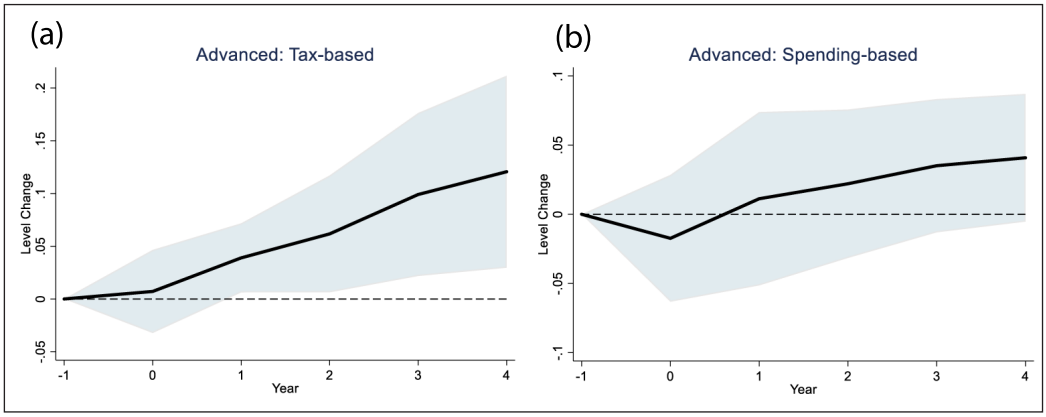

Figure 15 Tax vs. expenditure, AE. **(a)** Gini disposable, tax-based. **(b)** Gini disposable, expenditure-based.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = −1. The gray area represents 95 percent confidence interval.

D. CHANGES IN LAGS

As an additional robustness check, we vary the number of lags to one and three, instead of two in the baseline, while keeping the baseline specification otherwise. We conclude that changing lags do not have material effects (Figures 16, 17).

VIII. CONCLUSION

This paper studied dynamic effects of past fiscal consolidations on income inequality for selected LAC countries, as the economic fallout from the COVID-19 pandemic is having significant consequences for fiscal positions in the region, indicating the need to rebuild fiscal space over the medium term when the pandemic is under control. Fiscal consolidation episodes were identified by the narrative approach and the local projection method was chosen for the estimation of the impulse response function due to its flexibility and robustness to misspecifications.

We found that typical fiscal consolidations lead to an increase in income inequality on average in LAC. The results were similar to AE results in both direction and magnitude of income inequality changes. No discernible difference was observed when the sample was divided into fiscal consolidation during booms and slumps, while the income increase effect is larger for non-commodity exporters than for commodity exporters. Moreover, tax-based consolidation clearly exhibits larger effects than expenditure-based consolidation, unlike AE.

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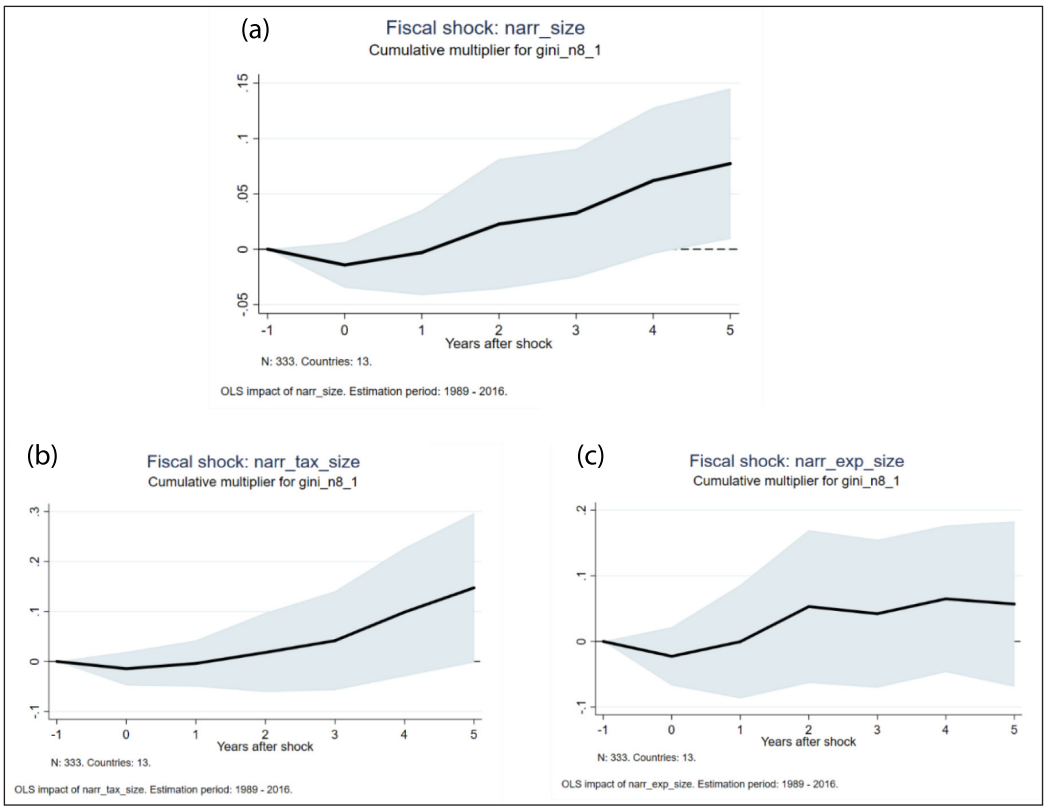

Figure 16 Regression results (lag one). **(a)** Gini disposable. **(b)** Gini disposable, tax shock only. **(c)** Gini disposable, expenditure shock only.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

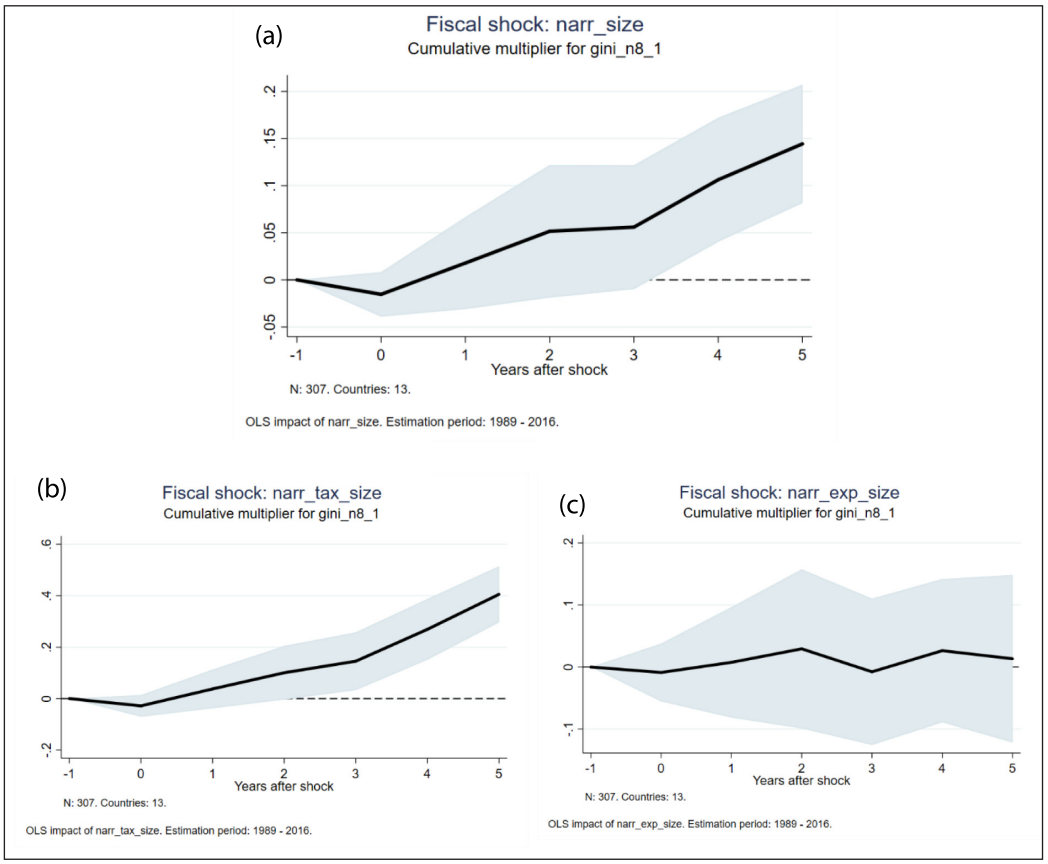

Figure 17 Regression results (lag three). **(a)** Gini disposable **(b).** Gini disposable, tax shock only. **(c)** Gini disposable, expenditure shock only.

Note: x-axis is years after the shock and y-axis is the cumulative change in the Gini coefficients relative to t = –1. The gray area represents 95 percent confidence interval.

We also showed that the main results are robust to alternative specifications and data sources. We perform robustness checks on different income inequality data, different shock identification (forecast error), different lags, and alternative specification of tax-expenditure shock breakdown. The main conclusion from the baseline specification holds for these robustness checks.

ADDITIONAL FILES

The additional files for this article can be found as follows:

- **Annex I.** LAC fiscal consolidation episodes based on the narrative approach. DOI: https://doi.org/10.31389/eco.437.s1
- **Annex II.** Results from including Bolivia. DOI: https://doi.org/10.31389/eco.437.s2
- **Annex III.** Alternative regression specification to past studies with AE sample. DOI: https://doi.org/10.31389/eco.437.s3
- **Annex IV.** Gini Coefficients SWIID8.1 v. SEDLAC. DOI: https://doi.org/10.31389/eco.437.s4

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COMPETING INTERESTS

The author has no competing interests to declare.

AUTHOR AFFILIATIONS


Takuji Komatsuzaki orcid.org/0000-0002-5364-7540
International Monetary Fund, US

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