THE AGGREGATE AND DISTRIBUTIONAL EFFECTS OF FINANCIAL GLOBALIZATION: EVIDENCE FROM MACRO AND SECTORAL DATA

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Abstract. We take a fresh look at the aggregate and distributional effects of policies to liberalize international capital flows—*financial globalization*. Both country- and industry-level results suggest that such policies have led on average to limited output gains while contributing to significant increases in inequality. The country-level results are based on 228 capital account liberalization episodes spanning 149 advanced and developing economies from 1970 to the present. Difference-in-difference estimation using industry-level data for 23 advanced economies suggests that liberalization episodes reduce the share of labor income, particularly for industries with higher external financial dependence, higher natural propensity to use layoffs to adjust to idiosyncratic shocks, and higher elasticity of substitution between capital and labor.

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I. INTRODUCTION

This paper takes a fresh look at the aggregate and distributional effects of policies to liberalize international capital flows—*financial globalization.*[1] The motivation is twofold. First, demonstrating the efficiency (or output) benefits claimed for capital account liberalization reforms has often proven elusive, that is, difficult to identify in empirical studies. Second, while the fact that trade generates winners and losers is well recognized, the distributional impacts of financial globalization have received less scrutiny. Identifying these distributional effects is all-the-more critical if the aggregate benefits are weak or mixed.

As Obstfeld (1998) notes, "economic theory leaves no doubt about the potential advantages" of capital account liberalization. In the neoclassical model, liberalizing the capital account facilitates more efficient allocation of international capital. Resources flow from countries where the return of capital is low to countries where it is high. This flow of resources reduces the cost of capital in recipient economies, triggering a temporary increase in investment and growth and a permanent effect on the level of output. However, several empirical studies find that the growth benefits of capital account liberalization are uncertain (Eichengreen 2001; Prasad et al. 2003; Edison et al. 2004; Kose et al. 2009). Eichengreen (2001) finds at best ambiguous evidence on the effect of capital account liberalization on growth. Edison et al. (2004) survey 10 studies of liberalization and conclude that only three of these provide evidence of positive effects of capital account liberalization. Prasad et al. (2003) extend the coverage to 14 studies and find that in only three of these is financial

[1] Some readers will prefer to refer to the process that we assess in this paper as external financial liberalization and the outcome of that process as financial globalization. In the following we will show that the effects on output (aggregate and sectoral) and distribution (aggregate and sectoral) depend on the evolution of capital flows that accompanies external liberalization. We thus use the terms interchangeably and have no issue with readers preferring to think of our results as pertaining more to liberalization than to globalization per se.

integration positively associated with economic growth. Kose et al. (2009) further extend the coverage to 26 studies and find that in only three is there robust evidence of positive effects.

Obstfeld also points to the "genuine hazards" of openness to foreign financial flows and concludes that "this duality of benefits and risks is inescapable in the real world." Indeed, since 1980, about 150 episodes of surges in capital inflows have taken place in more than 50 emerging market economies; about 20% of these episodes ended in a financial crisis, and many of them are associated with large output declines (Ghosh et al. 2016). The uncertain aggregate benefits related to capital account liberalization and the pervasiveness of booms and busts have led some observers (e.g., Rodrik and Subramanian 2009) to conclude that the benefits of an open capital account are unclear.

As discussed by Henry (2007), previous studies examining the macroeconomic effects of capital account liberalization suffer from two main limitations. First, many studies look for permanent growth effects rather than examining the evolution of output in the aftermath of a discrete change in the capital account policy. Second, identifying the causal effect of capital account liberalization is empirically challenging using aggregate macro data, particularly since liberalization episodes often take place alongside other reforms.

This paper takes a fresh look at the macro (output) and distributional impacts (using the Gini coefficient and the labor share of income as proxies) of capital account liberalization to address some limitations inherent in previous empirical work. In particular, our contributions are: (i) to identify large and discrete changes in capital account policy that may give rise to aggregate and distributional effects; (ii) to trace the response of the level of output and inequality in the aftermath of these episodes for 149 advanced and developing economies; (iii) to identify some of the factors that may shape the macro and distributional

impacts of capital account liberalization; and (iv) to provide causal evidence on the effect of capital account liberalization using an IV approach and industry-level data for 23 advanced economies.

Specifically, we apply a difference-in-difference identification strategy à la Rajan and Zingales (1998)—using three alternative identification strategies from theory—to examine the effect of liberalization episodes on industry output and labor share. First, following Gupta and Yuan (1999), among others, we exploit the cross-sectoral heterogeneity in external financial dependence. According to theory, the output and distributional effects of capital account liberalization should be larger in industries with higher external financial dependence. Second, insofar as capital account liberalization reduces the bargaining power of workers (by presenting a credible threat to relocate production abroad), liberalization episodes should have larger effects on the labor share in industries in which the propensity to use layoffs to adjust to economic conditions is higher. Finally, by reducing the cost of capital, capital account liberalization would lead to a reduction in the labor share in those industries in which the elasticity of substitution between capital and labor is larger than one.

The advantage of using industry-level data—that is, having a three-dimensional (*j* industries, *i* countries, and *t* time periods) data set—and using a difference-in-difference strategy is twofold:

- First, it allows us to control for aggregate and country sector shocks by including country–time, country–industry, and industry–time fixed effects. The inclusion of the country–time fixed effect is particularly important, as it absorbs any unobserved cross-country heterogeneity in the macroeconomic shocks that affect countries' output and

income distribution. In a pure cross-country analysis, this would not be possible, leaving open the possibility that the impact attributed to capital account liberalization may be due to other unobserved macroeconomic shocks.

- Second, it mitigates concerns about reverse causality. While it is typically difficult to identify the causal effects using macro panel data, it is much more likely that capital account liberalization will affect the cross-industry differences in output (or labor share) than the other way around; since we control for country–time fixed effects—and therefore for aggregate output (or labor share)—reverse causality in our set-up would imply that differences in the output (or labor share) across sectors influence the probability of reforms at the aggregate level—which seems to be implausible. Moreover, our main independent variable is the interaction between capital account liberalization reforms and industry-specific factors, and this makes it even less plausible that causality runs from the industry-level output (labor share) to this composite variable.

Our main findings based on country-level data for 149 countries suggest that capital account liberalization episodes on average have had a limited effect on output but have led to an (economically and statistically) significant increase in inequality. These aggregate and distributional effects vary across countries, depending on the strength of financial institutions, and over time, depending on whether liberalization episodes are followed by financial crises. While liberalization episodes increase output in countries with high financial depth, the effects on inequality are magnified in countries with lower levels of financial depth and inclusion. Similarly, capital account liberalization episodes lead to significant output contractions and increases in inequality when followed by financial crises, while these adverse effects are reduced when they are not followed by crises.

The evidence obtained using industry-level data for 23 advanced economies corroborates these findings and underpins a causal interpretation of them. We find that, while the output gains associated with capital account liberalization are small and not statistically significant, the distributional (labor share) effects are economically and statistically significant and long-lasting. The results suggest that liberalization episodes reduce the share of labor income, particularly for industries with higher levels of external financial dependence, those with a higher natural propensity to use layoffs to adjust to idiosyncratic shocks, and those with a higher elasticity of substitution between capital and labor. [2]

Our paper relates to three streams of the literature of capital account liberalization. The first concerns the output effects of liberalization (Eichengreen 2001; Prasad et al. 2003; Edison et al. 2004; Kose et al. 2009; Quinn and Toyoda 2008; Levchencko et al. 2009), the way in which these effects vary across countries depending on the strength of financial institutions (Ostry et al. 2009; Kose et al. 2011; IMF 2012), and within countries across different sectors (Levchencko et al. 2008). The second relates to the effect of capital account and stock market liberalization on income distribution using aggregate (Das and Mohapatra 2003; Jayadev 2007; De Haan and Sturm forthcoming; Furceri and Loungani 2018) and sectoral data (Larrain 2015 examine the effect of capital account openness on wages inequality). We contribute to these two strands of the literature by looking at output and distributional outcomes together—and therefore at equity-efficiency tradeoffs, both at the

[2] Whether the elasticity of substitution at the aggregate level is above or below one is a debated issue. As discussed by Karabarbounis and Neiman (2014), while the range of estimates in previous studies is quite wide, these estimates typically refer to short-term elasticities and not long-term ones. In contrast, exploiting cross-sectional variation focusing on long-term term trends, Karabarbounis and Neiman (2014) find estimates of the elasticity of substitution significantly larger than 1. Importantly in the context of our paper, their estimates at the aggregate level based on KLEMS sectoral data (as used in our paper) range between 1.17 and 1.49.

aggregate and at the sectoral level.[3] The third is on the drivers of the labor share. This literature has focused on the roles of technological progress in equipment goods and implied substitution of capital for routine labor tasks (Karabarbounis and Neiman, 2013; Alvarez-Cuadrado et al. 2015; Eden and Gaggl 2015; Acemoglu and Restrepo 2016; Dao et al. 2017), rising concentration and pricing power across markets (Autor et al. 2017; Barkai 2017), globalization of trade and production (Elsby et al. 2013; Boehm et al. 2017; Dao et al. 2017), measurement issues (Rognlie 2015; Koh et al. 2016; Bridgman 2017), and labor market institutions (Bentolila and Saint-Paul 2003; Ciminelli et al. 2018), but much less so on the role of capital account liberalization.

The remainder of the paper is structured as follows. Section 2 presents the data. Section 3 discusses the empirical methodology. Section 4 describes and discusses the results. Section 5 concludes and provides policy implications.

II. DATA

A. Country-Level Data

1. Capital Account Liberalization

The measure of capital account liberalization used in this paper is based on a *de jure* indicator of capital account restrictions. While *de jure* measures are noisy indicators of the true degree of openness of the capital account, they have the advantage of being less sensitive

[3] In addition to studying the output effects of capital account liberalization, this paper also goes beyond the distributional impacts discussed in Furceri and Loungani (2018) by using sectoral data and a differences-in-differences approach. This approach is especially important to identify causal effects and some of the channels through which financial globalization affects inequality.

to reverse causality issues in panel regressions (Collins 2007). The data for capital account openness are taken from the Chinn and Ito (2008) database. While the literature proposes alternative *de jure* measures of capital account openness (e.g. Quinn 1997; Quinn and Toyoda 2008), the Chinn and Ito index (Kaopen) provides the largest country and time coverage. The index measures a country's degree of capital account openness based on binary dummy variables that codify the restrictions on cross-border transactions from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)* reports.[4] The index is available for an unbalanced panel of 182 countries from 1970 to 2016 and ranges from -1.9 (a more restricted capital account) to 2.5 (a less restricted one) (Table A1 of Online Appendix A). The capital account openness index varies greatly across income groups, with stronger restrictions typically recorded in low-income and lower-middle-income countries (Table A2 of Online Appendix A).

Examining the behavior of inequality before and after the removal of restrictions on the capital account requires information about the date on which the country lifted the restrictions. This information is difficult to obtain for a large set of countries, as ideally the study would require information on the dates of policy decrees or legislative changes. To infer the timing of major policy changes, we identify capital account liberalization episodes by large changes in the Kaopen index, specifically changes that exceed by two standard deviations the average annual change over all the observations (that is, the change in the index is greater than 0.76).[5] This criterion identifies 228 episodes, the majority of which occurred in the last two decades.

[4] See Chinn and Ito (2008) for the details of the methodology.

[5] Previous papers follow a similar strategy to identify episodes of stock market liberalization (Henry 2007).

2. Output and Inequality

We obtain data on real GDP growth from the IMF's WEO database. We use data for Gini coefficients from the Standardized World Income Inequality Database (SWIID), which combines information from the United Nations World Income Database (UNWIDER) and the Luxembourg Income Study (LIS). The SWIID provides comparable estimates of market income inequality for 173 countries for as many years as possible from 1970 to 2015.[6] Gini coefficients theoretically fall between 0 (each reference unit receives an equal share of the income) and 100 (a single unit receives all income), and in our sample range from 18 to 78. Data for the labor share are taken from the Penn World Table 9.1. In our sample, the labor share varies between 14 and 83 percent.

B. Industry-Level Data

We compute the industry-level labor shares using the harmonized data on value added and labor compensation contained in the 2017 release of the EU KLEMS database (for details see O'Mahony and Timmer 2009).[7]

To identify the effects of capital account reforms on sectoral output, we use data on external financial dependence. We analyze the effect of liberalization on the industry labor share through data on external financial dependence, "natural" layoff rates, and the elasticity

[6] See Solt (2016) for the methodology. Details on the country coverage are provided in Table A3 of Online Appendix A.

[7] The EU KLEMS database provides data on added value and labor compensation in 33 industries, classified according to the ISIC Rev. 4 classification. Next, we define the labor share as the percentage of labor compensation relative to the added value. We drop two industries from the sample, namely the activity of households as employers and the activities of extraterritorial organizations and bodies, as for most countries labor compensation and/or added value data are not available for these industries.

of substitution between capital and labor. Importantly, these industry-specific factors are weakly correlated among each other (Table A4 of Online Appendix A), suggesting that the channels through which we identify the effect of capital account liberalization on the labor share can be considered as independent.

1. External Financial Dependence

The measure of external financial dependence—constructed for each industry as the median across all the firms in a given industry—is the ratio of total capital expenditures minus current cash flow to total capital expenditures.[8] Figure A1 (Online Appendix A) presents the industry-specific measures of external financial dependence.

2. Natural Layoff Rate

As a proxy for job destruction rates, we use layoff rates computed by Bassanini et al. (2009) using US layoff rates data from the 2004 CPS Displaced Workers Supplement. US layoff rate data are available for 22 industries categorized according to the ISIC Rev. 3 classification. The latest vintage of the EU KLEMS database instead follows the ISIC Rev. 4 classification. Hence, we match the US layoff rates of Bassanini et al. (2009) from the ISIC Rev. 3 to the ISIC Rev. 4 classification using the many-to-one method that O'Mahony and Timmer (2009) use to backcast value-added data. Additionally, since post and telecommunications were categorized as a single industry under the ISIC Rev. 3 classification, whereas they account for two industries under the ISIC Rev. 4 classification,

[8] Hui Tong kindly provided the data. For details, see Tong and Wei (2011).

we impose the same lay-off rate for the postal and courier industry and the telecommunications industry. After matching, we have layoff data for 21 of the 31 industries in our sample. Figure A2 (Online Appendix A) shows the US layoff rates by industry.

3. Elasticity of Substitution between Capital and Labor

To estimate the industry-specific elasticities of substitution, we assume that production in each industry follows a multiplicative production function featuring capital, labor, and labor- and capital-augmenting technical progress. In this setting it can be shown that the labor share responds to changes in the capital/output ratio in a way that depends on the elasticity of substitution between labor and capital (Bentolila and Saint-Paul 2003):

$$\frac{ds_i}{dk_i} = -\frac{(1+\sigma_{KL.i})}{(k_i \mu_i)} \quad (1)$$

where the subscript *i* denotes industry, *s* is the share of value added accruing to labor, σ_{KL} is the elasticity of substitution between labor and capital, holding the price of inputs constant, *k* is the capital to value added ratio, and μ is the elasticity of the labor demand with respect to wages, holding capital and the real price of inputs constant. Our approach to derive industry-specific elasticities of substitution consists of estimating the $\frac{ds_i}{dk_i}$ relationship while using external estimates for the elasticity of the labor demand.

We define the labor share according to the following multiplicative function (for details, see Bentolila and Saint-Paul 2003):

$$s_{ijt} = A_{ijt}^{\beta_0}(k_{ijt})^{\beta_{1i}}\left((q_{ijt}/p_{ijt})\right)^{\beta_{2i}}\vartheta_{ijt}^{\beta_3} \quad (2)$$

where subscripts *i*, *j*, and *t* refer, respectively, to industry, country, and time; *s* is the share of value added accruing to labor; *A* is capital-augmenting technical change; *q/p* is the real price of inputs; *k* is the capital to value added ratio; ϑ is a residual term (so that β_3 is 1); and the β_{0-2} are technological parameters. Taking the logs, Equation (2) becomes:

$$\ln s_{ijt} = \beta_0 \ln A_{ijt} + \beta_{1i} d_i \ln k_{ijt} + \beta_{2i} d_i \ln(q_{ijt}/p_{ijt}) + \vartheta_{ijt} \quad (3)$$

where we allow the βs to vary across industries.

In estimating Equation (3), we treat the right-hand side as potentially endogenous. We characterize such endogeneity by assuming the following specification for the error term:

$$\vartheta_{ijt} = \gamma_{it} + \delta_{jt} + \theta_{it} + \epsilon_{ijt} \quad (4)$$

where γ, δ, and θ are, respectively, industry–time, country–time, and country–industry effects that are potentially correlated with the explanatory variables (for instance, they may relate to the economic cycle and time-invariant institutional factors). Further, ϵ is an industry–country–time shock that we assume to be uncorrelated with the regressors. Hence, the equation that we estimate becomes:

$$\ln s_{ijt} = \beta_0 \widetilde{A_{ijt}} + \beta_{1i} d_i k_{ijt} + \beta_{2i} d_i (q_{ijt}/p_{ijt}) + \gamma_{it} + \delta_{jt} + \theta_{it} + \epsilon_{ijt} \quad (5)$$

where the accent $\breve{}$ denotes our proxy for capital-augmenting technical change, that is, TFP.

We compute (i) the labor share using labor compensation and value-added data from the EUKLEMS database; (ii) the capital–output ratio using gross capital stock and value-added data (both in volumes) from the OECD STAN database; and (iii) the real price of inputs using data for the price deflators of intermediate inputs and gross output, again from the OECD STAN database. We obtain the data for TFP from the EUKLEMS database.

After estimating Equation (5), we derive elasticities of substitution by rearranging Equation (1) in the following form:

$$-\sigma_{KL.i} = 1 + \frac{ds_i}{dk_i} k_i \mu_i \tag{6}$$

To proceed, however, we need estimates of the elasticity of the labor demand with respect to wages, holding capital and the price of inputs constant. Following Bentolila and Saint-Paul (2003), we make the further assumption that this does not vary across industries and rely on the average estimate from the 70 studies that Hamermesh (1993) reviews, that is, -0.39. Figure A3 (Online Appendix A) presents industry-specific estimates of the elasticities of substitution between capital and labor.

III. EMPIRICAL METHODOLOGY

This section describes the empirical methodologies used to examine the aggregate and distributional effects of capital account liberalization at the country and the industry level.

A. Country-Level Approach

1. Baseline

To assess the impact of capital account liberalization, we estimate the following specification:

$$g_{it} = a_i + \gamma_t + \sum_{j=0}^{l} \delta_k D_{i,t-k} + \sum_{k=0}^{l} \vartheta_k X_{i,t-k} + \varepsilon_{it} \quad (7)$$

where g is the annual change in the log of output (or Gini)[9]; D is a dummy variable that is equal to one at the start of a capital account liberalization episode and zero otherwise; a_i are country fixed effects included to control for unobserved cross-country heterogeneity[10]; γ_t are time fixed effects to control for global shocks; and X is a vector of control variables including reforms in trade, the current account, the product market and the labor market (employment protection legislation).[11]

As a baseline, we estimate Equation (7) using OLS on an unbalanced panel of annual observations from 1970 to 2015 for 149 advanced and developing economies.[12] The number of lags that we choose to capture the medium effect of reforms is five. In addition to the regression results, we present the impulse response functions (IRFs) to describe the response of output (inequality) following a liberalization episode. We obtain the confidence bands

[9] The data on real GDP are from the IMF WEO 2016.

[10] In the case of inequality, country-fixed effects also help to control for the fact that in some countries inequality is measured using income data while in other countries using consumption data.

[11] The data are from Ostry et al. (2009).

[12] See Table A3 (Online Appendix A) for the list of countries.

associated with the estimated impulse response functions using the standard errors of the estimated coefficients based on clustered (at the country level) robust standard errors.

2. Accounting for Differential and Threshold Effects

It is commonly argued that the benefits of financial globalization depend on the quality of financial institutions (Ostry et al. 2009; Kose et al. 2011; IMF 2012). Kose et al. (2011), for example, identify certain threshold levels of financial development (proxied by the depth of the credit market) that an economy needs to attain before it can benefit from, and reduce the risks associated with, financial globalization. Capital account liberalization may facilitate consumption smoothing and reduce volatility for countries with strong financial institutions, but where institutions are weak and access to credit is not inclusive, it may result in limited output gains.

We examine this hypothesis by assessing whether the effect of capital account liberalization depends on the strength of financial institutions and on whether liberalization episodes are followed by crises. Specifically, we estimate the following equation:

$$g_{it} = a_i + \gamma_t + \sum_{j=0}^{l} \vartheta_j M_{i,t-j} + \sum_{j=0}^{l} \delta_j^{-} D_{i,t-j} G(z_{it}) + \sum_{j=0}^{l} \delta_j^{+} D_{i,t-j} (1 - G(z_{it})) + \varepsilon_{it} \quad (8)$$

with $G(z_{it}) = \frac{\exp(-\gamma z_{it})}{1+\exp(-\gamma z_{it})}, \quad \gamma > 0,$

in which *z* is an indicator of financial development, normalized to have zero mean and unit variance, and $G(z_{it})$ is the corresponding smooth transition function of the degree of financial development (financial liberalization and inclusion), which takes the value 1 for very low

levels of financial liberalization and inclusion (when z goes to minus infinity) and zero for very high levels of financial liberalization and inclusion (z goes to plus infinity). We also check whether the aggregate and distributional effects depend on whether capital account liberalization episodes are followed by crises. In this case we replace G(z) with a dummy variable which takes 1 for the years of crises following liberalization, and zero otherwise. M_{it} is the same set of control variables used in the baseline specification but now also including $G(z_{it})$.

The use of the smooth transition function is equivalent to the smooth transition autoregressive (STAR) model developed by Granger and Teräsvirta (1993) to assess non-linear effects above/below a given threshold or regime. The main advantage of this approach relative to estimating SVARs for each regime is that it uses a larger number of observations to compute the impulse response functions, improving the stability and precision of the estimates. In addition, this estimation strategy can also handle the potential correlation of the standard errors within countries more easily by clustering at the country level.

B. Industry-Level Approach

We extend the specification applied to the aggregate data using a three-way (industry–country–time) panel. The identification strategy relies on a specific channel through which capital account liberalization may affect sectoral outcomes: (i) dependence on external finance—for output and the labor share; (ii) the rate of job turnover (natural layoff rate)—for the labor share; and (iii) the elasticity of substitution between capital and labor—for the labor share. In particular, we estimate the following specification:

$$g_{jit} = a_{ij} + \gamma_{it} + \rho_{jt} + \sum_{k=0}^{l} \delta_k S_j D_{i,t-k} + \varepsilon_{jit} \quad (9)$$

where a_{ij} are country–industry fixed effects, which allow us to control for industry-specific factors, including for instance cross-country differences in the growth of certain sectors that could arise from differences in comparative advantage; γ_{it} are country–year fixed effects, included to control for any variation that is common to all the sectors of a country's economy, including reforms as well as macroeconomic shocks; ρ_{jt} are industry–time fixed effects, which allow us to control for common factors affecting specific industries—such as factors that are common across countries driving sectoral reallocation; and *S* denotes the sector-specific channels discussed in the previous section. The specification is estimated for an unbalanced panel of 23 advanced economies and 25 industries over the period 1975–2015.[13]

IV. RESULTS

A. Country-Level Analysis

Figure 1 shows the estimated dynamic response of output and inequality to major capital account liberalization episodes over the five-year period following reform implementation, together with the 90% confidence interval around the point estimate. The results suggest that these episodes have not had a significant impact on output but have led to a statistically-significant increase in inequality of about 4 percentage points five years after

[13] It is important to note that this specification allows us to estimate the impact of capital account liberalization on output and labor shares *within* industries and therefore ignores potential effects due to changes in industrial composition (*between* effects). However, as discussed by Dao et al. 2017 and Ciminelli et al. 2018, within-industry changes are more important than changes in industrial composition to explain movements of the labor share at the country level.

the liberalization (see also Table 1). This effect is economically significant, as it corresponds to about one standard deviation of the average increase in the Gini coefficient in our sample. Following liberalization episodes, the labor share also statistically significantly declines by about 4½ percentage points in the medium term.

1. Addressing Endogeneity

A potential limitation of our approach is that capital account liberalization episodes are not "pure" shocks and therefore could be correlated with unobserved factors (omitted variable bias). While including reforms in other areas mitigates this issue, it could still be the case that unobserved factors influence the probability of financial liberalization and our outcomes of interest. For example, governments that choose to liberalize the capital account may be more right-wing and less likely to implement redistributive policies. Similarly, capital account liberalization can be associated with more prudent fiscal policies or with the process of development (Obstfeld 1998). To check the robustness of our results, we expand our set of controls to include: (i) a discrete variable for left-, center-, and right-wing governments; (ii) changes in the share of redistributive policies—using changes in the difference between gross and net Gini coefficients as a proxy; (iii) the level and the square of the log of GDP per capita; (iv) changes in the share of government expenditures in GDP; and (v) changes in the share of industry and agriculture in value added. Figure 2 suggests that the inclusion of these additional controls does not affect the results.

Another possible issue is that countries implement capital account liberalization reforms because of concerns regarding future weak economic growth. In these circumstances, future growth may be negatively correlated and bias the estimated coefficients toward zero. To address this, we also estimate a specification that controls for past growth as

well as for the expected growth at *t-1* of the future GDP growth rates (using the IMF WEO forecasts) over periods *t* to *t+5*—that is, the time horizon over which we compute the impulse response functions. The results reported in Figure 3 are very close to and not statistically different from those that we obtained for the baseline, suggesting that this issue is not empirically important.

Another potential concern is that inequality (as well as GDP growth) may start to increase before the occurrence of major liberalization episodes. While inspection of the data suggests that, on average, this is not the case, we check the robustness of the results to the inclusion of (two) lags of the dependent variables.[14] The results that we obtain following this approach (Figure 4) are similar to and not statistically different from the baseline.

Finally, to address the endogeneity concerns further, we implement an instrumental variable (IV) approach using two instruments that capture the scope for reforms and the peer pressure to reform. We capture the scope for capital account liberalization reform using the initial stance of capital account regulation—with the four-year lagged value of the capital account openness indicator as a proxy (see also Larrain (2015) for an application of this instrument). The idea is that the lower is the indicator of capital account openness, the more scope there is to reform. The second instrument, peer pressure, is proxied by a weighted-average of current and lagged capital account liberalization episodes in other countries, where the weights are determined by the strength of trade linkages between other countries and the country undertaking capital account liberalization. The conjecture is that a country is

[14] Looking at the Gini coefficient before and after the beginning of capital account liberalization episodes suggests that, on average, the Gini coefficient has remained broadly stable up to 5 years before the liberalization, while it has increased by about 0.8 percentage point five years after (see Furceri and Loungani 2018). The results are robust to different lag parametrizations.

more likely to implement capital account liberalization when its main trading partners are undertaking or have undertaken capital account liberalization. We use bilateral trade weights given the limited data availability to construct bilateral capital flow weights for most of the observations in the sample. For the country–time observations for which bilateral capital flows are available, the correlation between bilateral trade and capital flow linkages is high (about 0.7) and statistically significant. Specifically, the instrument is computed as follows:

$$I_{i,t} = \sum_{j=1,.n\ (j\neq i)} D_{j,t}\, w_{i,j,t} \qquad (10)$$

where $I_{i,t}$ is the instrument of capital account liberalization reform for country *i* at time *t* ($D_{i,t}$); $D_{j,t}$ is the capital account liberalization reform for country *j* at time *t*; and $w_{i,j,t}$ is the share of total exports and imports between country *i* and country *j* in the total exports and imports for country *i*: $\frac{Export_{i,j,t}+Import_{i,j,t}}{Export_{i,t}+Import_{i,t}}$.

The first-stage estimates of capital account liberalization reforms using these instruments suggest that these are statistically significant and exhibit the expected sign.[15] In addition, we can plausibly consider both instruments to be exogenous: reforms in other countries do not drive the reforms in the country considered and do not have any effect on

[15] In particular, the estimation results are the following:

$$D_{i,t} = \underset{(5.60)}{0.249} I_{i,t} - \underset{(-6.59)}{0.011}\ Kaopen_{i,t-4}$$

with t-statistics in parentheses, and joint F-test of 39.27.

the latter other than through pressure on domestic authorities to undertake reforms.[16]The results that we obtain following this approach are also similar to and not statistically different from the baseline (Figure 5).

2. Comparison with literature

Many studies looking at the impact of capital account liberalization on growth have typically focused on medium-term effects by estimating non-overlapping 5-year panel regressions. To examine how our results compare with previous findings, we modify equation (7) as follows:

$$g_{is} = a_i + \gamma_s + \delta D_{i,,t-s} + \vartheta X_{i,t-s} + \varepsilon_{is} \qquad (11)$$

where g_{is} is the 5-year average growth in output (Gini) in country *i*; *D* is the average number of capital account liberalization reforms in country *i* during (the preceding) 5 years—we consider the change in capital account openness during 5 years, as done in previous studies, as a robustness check ; *X* is the set of control variables included in equation (7)—as a robustness check, we expand it to include the initial level of GDP per capita (Gini); s=1971-75,1976-1980…2011-2015.

[16] The Kleibergen–Paap rk Wald F statistic of weak exogeneity and the Hansen J statistic p-value for overidentification suggest that we can consider these variables to be strongly exogenous. In addition, the estimates of the effects of these instruments on output are not statistically significant once we have controlled for episodes of capital account liberalization, suggesting that they do not directly affect output.

The results presented in Table 2 confirm our main findings: capital account liberalizations do not have a statistically significant effect on output but do have a positive and statistically significant effect on Gini.[17]

3. Liberalization vs. Flows

We have focused on de jure measures of capital account liberalization to isolate policy changes that are likely to have led to an increase in capital flows. One may still ask whether these policy changes are associated with an actual sizeable increase in flows and whether the output and distributional effects of liberalization depend on the magnitude of such flows. To answer these questions, we re-estimate Equation (8) by interacting our measures of liberalization episodes with the change in capital flows occurring in the five years after liberalization—the horizon of our IRFs. The results suggest that the quantum of flows shapes the distributional effects of liberalization (Figure 6). While the output effects seem largely unaffected by the magnitude of flows, the impact of liberalization on inequality is much stronger and statistically significant when liberalization engenders a large increase in flows.

[17] While the output results are consistent with those found in many previous studies, they differ from those of Quinn and Toyoda (2008), who use an alternative *de jure* measure (and do not including time fixed effects). We further check the robustness of our results to: (i) include the set of controls used in Quin and Toyoda; (ii) limiting the sample to those observations for which their measure of capital account restriction is available; (iii) using their de jure measure. The results obtained with these alternative specifications confirm that capital account liberalizations have limited and not statistically-significant output effects but negative and statistically-significant distributional effects. The output results obtained using the indicator of capital account openness in levels (both the Chinn-Ito and the Quinn-Toyoda) are also not statistically significant.

4. Threshold Effects

As previously discussed, the existing literature suggests that the output gains from financial globalization may depend on the strength of financial institutions (Ostry et al. 2009; Kose et al. 2011; IMF 2012). The results that we present in Figure 7 and Table 3 corroborate these findings but also show that the strength of financial institutions influences the distributional effects of capital account liberalization.

Figure 7 presents the medium-term response of output and inequality for the following cases: (i) high versus low domestic financial liberalization—based on the structural reform indicator of Ostry et al. (2009); (ii) high versus low financial inclusion—identified as the ratio of adults in the population who have borrowed from a formal financial institution in past years (Demirguc-Kunt et al. 2015); and (iii) episodes where financial crises have followed in the five years after liberalization—the same time horizon considered in the analysis—versus episodes that have not led to crises.

We find positive output effects in cases in which the domestic financial market is highly liberalized and negative (but not significant) effects when it remains largely restricted. This suggests that the small overall effects might reflect offsetting effects that depend on the extent of domestic financial liberalization. The output effects are also positive (but not statistically significant) in cases where liberalization is not followed by a crisis in the 5-year window considered in the analysis, but these are outweighed by the sharply negative output effects in cases in which a crisis occurs.

Similarly, we find that the effect of capital account liberalization on inequality is magnified in countries with largely restricted domestic financial markets and limited financial inclusion and when a crisis follows liberalization.

5. Role of the 2008 Great Recession

Given the importance of crisis episodes in shaping the output and distributional effects of financial globalization, a natural question is whether the 2008 Great Recession had a measurable effect. To test for this, we re-estimate equation (7) on the sample up to 2007. The results presented in Figure 8 (and Table 4) are extremely close to, and not statistically different from, those presented in Figure 1 using the full sample.[18] This is not surprising given that only a handful of countries liberalized their capital account in recent years.

6. Advanced economies and labor share

Before turning to the industry-level results, we re-examine the aggregate effects of capital account liberalization reforms using the same sample of advanced countries covered in the industry-level analysis. In addition, we also look at the macroeconomic effect of these reforms on the labor share of income, given that this is our "distributional" dependent variable in the industry-level analysis. The results presented in Figure 9 and Table 4 confirm that capital account liberalization engenders limited output gains but significant distributional consequences for the group of advanced economies covered in the industry-level analysis. While the output effects are not statistically significant, we find that capital account liberalization reforms are associated with an increase in the Gini coefficient of about 6 percent (the effect is almost twice as large as the one obtained for the full sample), and with a decrease in the labor share of income of about 4 percentage points (similar to the effect for the full sample).[19]

[18] Similar results are obtained when omitting from the full sample only the observations for the years 2008-09.

[19] Similar results are obtained when restricting the sample up to 2007 (Table 4, columns VII-IX).

B. Industry-Level Analysis

The industry-level analysis confirms the results from the macro data, namely that the output gains associated with capital account liberalization are small, and that the distributional effects are large, statistically significant and long-lasting.

Figure 10 and Table 5 present the differential output effect resulting from the estimation of Equation (9). They show that the short-term output effects of capital account liberalization reforms vary across sectors depending upon the degree of external financial dependence. The results suggest that the differential medium-term output gain associated with liberalizing the capital account for an industry with relatively high dependence (at the 75^{th} percentile of the distribution of external financial dependence—such as construction) compared with an industry with relatively low external financial dependence (at the 25^{th} percentile of the distribution—such as transportation equipment) is about 2%. The estimates of the effects on labor productivity and employment are imprecise, but the point estimates suggest a positive (differential) effect for productivity and a negative one for employment.

Figure 11 and Table 6 present the differential effects of capital account liberalization on the industry-level labor share using our three identification strategies, which rely on industry heterogeneity in: (i) external financial dependence; (ii) the natural layoff rate; and (iii) the elasticity of substitution between capital and labor.

Panel A shows that, over the medium term—that is, five years after the reform takes place—capital account liberalization episodes tend to reduce the labor share in industries with higher external financial dependence. The results suggest that the differential medium-term reduction in the labor share between an industry with relatively high external financial dependence (at the 75^{th} percentile of the cross-sector distribution) and one with relatively low

external financial dependence (at the 25th percentile) is about 5 percentage points. This effect is not only statistically but also economically significant. In particular, under the conservative assumption that capital account liberalization episodes did not have any impact on the labor share in sectors with external financial dependence in the 25th percentile of the distribution, the results suggest that capital account liberalization episodes on average reduced labor shares by about 3½ percentage points—similar to our macro-level results.[20]

The results presented in Panel B suggest that capital account liberalization episodes tend to reduce the labor share of income in those sectors with a higher natural layoff rate. The differential medium-term reduction in the labor share associated with liberalizing the capital account for an industry with a relatively high natural layoff rate (at the 75th percentile of the distribution—such as textiles) compared with an industry with a relatively low layoff rate (at the 25th percentile—such as chemicals) is about 2 percentage points.

Finally, we also find that the reduction in the labor share following capital account liberalization is higher in industries with higher elasticities of substitution between capital and labor (Panel C). The differential medium-term reduction in the labor share between an industry with a relatively high elasticity of substitution (at the 75th percentile of distribution—such as machinery and equipment) and one with a relatively low elasticity of substitution (at the 25th percentile—such as accommodation) is about 3½ percentage points. Consistent with theory, we find that this effect is only significant in industries with elasticities of substitution between capital and labor greater than 1 (Panels C1 and C2). [21]

[20] This effect is computed as $\sum_i \delta_5 I_i w_i$, where δ_5 is the medium-term coefficient estimates in equation (9), I_i is an indicator variable which takes value 1 for industries with a level of external financial dependence above the 25th percentile of distribution, w_i is average (across countries and time) share of value added in total value added for industry *i*.

[21] Similar results are obtained when restricting the sample up to 2007.

1. Robustness Checks

A possible concern in estimating Equation (9) is that the results are biased due to the omission of other macroeconomic variables affecting output and the labor share that are at the same time correlated with capital account liberalization episodes. To check the robustness of our results, we re-estimate Equation (9) adding the interaction between the index of external financial dependence (natural layoff, elasticity of substitution) and: (i) trade reforms; (ii) current account liberalization;[22] (iii) domestic financial liberalization; (iv) product market deregulation; (vi) employment protection legislation deregulation; (vi) union density; and (vii) technological change (using the relative price of investment as a proxy). The output and labor share effects of these estimations are similar to, and not statistically different from, those reported in the baseline (Table 7 column II-VIII, and Online Appendix Tables B1-7).

Finally, since the labor share is typically countercyclical (Kehrig and Vincent 2017), we check whether the effect on the labor share is robust to controlling for sectoral growth. While the results based on this analysis should not be interpreted as the overall effect of capital account liberalization on the labor share, since liberalization affects the labor share indirectly through its impact on sectoral growth, they are still statistically significant and close to those obtained in the baseline Table 7 column IX, and Online Appendix Table B8).

V. CONCLUSIONS

This paper takes a fresh look at the economic effects of policies to liberalize international capital flows. It uses aggregate and sector-level data to re-examine the effects of

[22] Current account liberalization regard financial restrictions on imports and exports.

capital account liberalization policies on output and inequality and to determine how these effects depend on the strength of financial institutions.

The results based on 228 capital account liberalization episodes in 149 advanced and developing economies suggests that these reforms on average have led to limited output gains but contributed to significant increases in inequality. These average estimates, however, mask differences across countries and over time. While liberalization episodes have tended to increase output in countries with well-developed domestic financial sectors, the effects on output have been adverse in cases where domestic financial markets remain under-developed or when liberalization episodes have been followed by a crisis. With respect to inequality, our results suggest salient adverse effects on average, particularly when domestic financial liberalization is low and not-inclusive or when a crisis follows liberalization—the analysis also controls for the direct effect of financial crises, which we find reduce output and increase inequality.

The sectoral-level results for 23 advanced economies also suggest that capital account liberalization episodes reduce the share of labor income, especially for industries that have a high level of external financial dependence or that are characterized by a higher natural propensity to adjust their workforce in response to idiosyncratic shocks or when the elasticity of substitution between capital and labor is relatively high (and greater than unity). These sectoral results underpin a causal interpretation of the findings using macro data.

These findings do not imply that countries should not undertake (or have undertaken) capital account liberalization, but the results regarding distributional impacts do suggest an additional reason for caution (particularly when set against the weak efficiency gains). In particular, our findings suggest that countries where a reduction in inequality is an important

policy goal may need to design liberalization in a manner that balances the equity impact against the other effects. This might require specifically the restriction of certain types of flows that generate adverse equity–efficiency trade-offs (such as carry-trade flows or flows that give rise to unhealthy asset price or credit booms) and the encouragement of other types of flows (particularly those that give rise to durable increases in investment and growth, such as greenfield investments)—Ostry et al. (2012). Beyond this, our paper highlights a number of areas requiring attention in trying to mitigate the undesirable consequences of capital account liberalization. Steps to develop domestic financial institutions as well as depth and inclusion are clearly important in this connection. Fiscal redistribution can also help to mitigate the adverse distributional consequences of financial globalization without exerting much of an effect on economic efficiency unless such redistribution is extreme (Ostry et al. 2014). Finally, in addition to redistribution, policies could be designed to mitigate some of the anticipated effects in advance—for instance, through increased spending on education and training (so-called pre-distribution policies) to foster greater equality of opportunity.

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Table 1. The Aggregate and Distributional Effects of Capital Account Liberalization

	(I)	(II)	(III)
	Output	**Gini**	**Labor share**
Capital account reform (t)	-0.171	1.419***	-0.762**
	(-0.49)	(4.59)	(-2.51)
Capital account reform (t-1)	0.569*	0.844**	-0.719**
	(1.69)	(2.31)	(-2.39)
Capital account reform (t-2)	0.082	0.618*	-0.601**
	(0.16)	(1.72)	(-2.00)
Capital account reform (t-3)	0.190	-0.038	-0.532*
	(0.49)	(-0.11)	(-1.87)
Capital account reform (t-4)	0.485	0.332	-0.599**
	(1.43)	(0.85)	(-2.18)
Capital account reform (t-5)	0.371	0.387	-0.325
	(0.988)	(0.92)	(-1.16)
Medium-term effect	1.371	3.561***	3.537***
F-test medium-term effect	0.96	10.97	17.81
N	2,241	2,159	1,947
R2	0.36	0.12	0.89

Note: T-statistics based on robust clustered standard errors at the country level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The medium-term differential effect denotes the effect of capital account liberalization episodes five years after the reform. The estimates are based on equation (7).

Table 2. The Aggregate and Distributional Effects of Capital Account Liberalization—Panel Regressions using 5year averages

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
	Output			Gini			Labor share		
Dependent variable (t-1)			-0.224***			-0.309***			0.816***
			(-3.71)			(-4.79)			(39.58)
Capital account reform (t-1)	-0.447		-0.898	2.860**		2.920***	-0.745***		-0.226*
	(-0.30)		(-0.78)	*		(3.17)	(-2.60)		(-1.86)
				(2.77)					
Change in capital account (t-1)		0.599			1.357**			-0.138*	
		(0.56)			(2.01)			(-1.67)	
N	492	492	456	463	463	463	413	413	413
R2	0.55	0.56	0.65	0.32	0.32	0.41	0.92	0.92	0.99

Note: T-statistics based on robust clustered standard errors at the country level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The estimates are based on equation (11). The set of controls, not reported, include lagged reforms in current account, trade, product and labor market, as well as country and time fixed effects.

Table 3. The Aggregate and Distributional Effects of Capital Account Liberalization—The Role of Financial Institutions and Crises

	(I)	(II)	(III)	(IV)	(V)	(VI)
	Output			Gini		
	Financial Liberalization	Financial Inclusion	Crises	Financial Liberalization	Financial Inclusion	Crises
Medium-term effect*G(Z)	-2.241	1.931	-2.956	4.471*	4.028***	4.283***
	(1.30)	(0.44)	(2.03)	(3.34)	(7.74)	(9.70)
Medium-term effect*[1- G(Z)]	3.524*	0.865	1.939	3.244**	2.972*	2.885*
	(2.70)	(0.25)	(1.63)	(4.20)	(2.67)	(3.35)
F-test difference medium-term effect	2.75*	0.09	4.03**	0.14	0.20	0.44
N	2,001	2,001	2,001	2,159	2,159	2,159
R2	0.38	0.38	0.38	0.12	0.12	0.12

Note: F-statistics based on robust clustered standard errors at the country level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The medium-term differential effect denotes the effect of capital account liberalization episodes five years after the reform. The estimates are based on equation (8). G(Z)=1 (0) for low (high) levels of financial liberalization and financial inclusion and when reforms are (not) followed by crises. The estimates are based on equation (9).

Table 4. The Aggregate and Distributional Effects of Capital Account Liberalization

	All countries up to 2007			23 advanced countries			23 advanced countries up to 2007		
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
	Output	Gini	Labor share	Output	Gini	Labor share	Output	Gini	Labor share
Capital account reform (t)	-0.147	1.432***	-0.417	0.049	1.916*	-0.565	-0.142	2.015*	-0.715
	(-0.38)	(3.65)	(-1.48)	(0.10)	(1.92)	(-1.07)	(-0.28)	(1.96)	(-1.28)
Capital account reform (t-1)	0.538	1.014**	-0.374	0.170	0.883	-0.587	-0.068	0.938	-0.674
	(1.41)	(2.36)	(-1.38)	(0.26)	(0.81)	(-1.22)	(-0.10)	(0.84)	(-1.39)
Capital account reform (t-2)	-0.056	0.694*	-0.326	0.802*	0.837	-0.720	0.505	0.845	-0.775
	(-0.11)	(1.71)	(-1.14)	(1.77)	(0.99)	(-1.45)	(0.92)	(0.91)	(-1.57)
Capital account reform (t-3)	0.377	0.039	-0.298	0.838	-0.015*	-0.551	0.567	-1.509	-0.581
	(0.83)	(0.10)	(-1.06)	(1.54)	(-1.68)	(-1.31)	(0.94)	(-1.61)	(-1.30)
Capital account reform (t-4)	0.453	0.446	-0.438	1.234***	0.100	-0.497	0.978*	1.015	-0.433
	(1.28)	(0.94)	(-1.57)	(2.81)	(1.12)	(-1.40)	(1.98)	(1.11)	(-1.08)
Capital account reform (t-5)	0.276	0.530	-0.252	0.076	0.235*	-0.424	-0.119	2.348*	-0.286
	(0.64)	(0.92)	(-0.82)	(0.20)	(1.75)	(-1.14)	(-0.29)	(1.68)	(-0.68)
Medium-term effect	1.411	4.155***	-2.105**	3.169	5.482***	-3.346***	1.721	5.653*	-3.465***
F-test medium-term effect	0.87	8.81	6.27	1.99	4.07	7.94	0.43	3.05	6.81
N	1,704	1,658	1,479	639	655	579	519	511	453
R2	0.40	0.13	0.91	0.65	0.20	0.89	0.59	0.21	0.89

Note: T-statistics based on robust clustered standard errors at the country level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The medium-term differential effect denotes the effect of capital account liberalization episodes five years after the reform. The estimates are based on equation (7).

Table 5. The Effect of Capital Account Liberalization on Sectoral Output and its Components

	(II)	(III)	(IV)
	Output	**Labor Productivity**	**Employment**
Capital account reform$_{it}$*S$_j$	0.973	6.199	-5.732
	(0.97)	(1.04)	(-0.98)
Capital account reform$_{it-1}$*S$_j$	0.435	2.941	-3.680
	(0.36)	(0.53)	(-0.66)
Capital account reform$_{it-2}$*S$_j$	0.186	3.763	-3.021
	(0.17)	(0.64)	(-0.51)
Capital account reform$_{it-3}$*S$_j$	-1.164	5.177	-4.829
	(-0.15)	(0.90)	(-0.84)
Capital account reform$_{it-4}$*S$_j$	0.255	2.086	-1.948
	(0.31)	(0.43)	(-0.40)
Capital account reform$_{it-5}$*S$_j$	1.743*	1.185	-1.0.23
	(2.12)	(0.29)	(-0.25)
Medium-term differential effect	1.937	12.061	-11.434
F-test medium-term effect	1.56	0.84	0.76
N	20,777	20,777	21,302

Note: T-statistics based on robust clustered standard errors at the country*sector level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The medium-term differential effect denotes the effect of capital account liberalization episodes between a sector with high external financial dependence (at the 75th percentile of the distribution) and a sector with low external financial dependence (at the 25th percentile of the distribution). The estimates are based on equation (10).

Table 6. The Effect of Capital Account Liberalization on Sectoral Labor Share

	(II)	(III)	(IV)
	External Financial Dependence	**Layoff Rate**	**Elasticity of Substitution**
Capital account reform$_{it}$*S$_j$	-1.476**	-0.016	-0.226***
	(-2.39)	(-0.11)	(-3.70)
Capital account reform$_{it-1}$*S$_j$	-0.221	-0.045	0.012
	(-0.26)	(-0.28)	(0.19)
Capital account reform$_{it-2}$*S$_j$	-1.858	-0.279	-0.124*
	(-1.11)	(-1.47)	(-1.87)
Capital account reform$_{it-3}$*S$_j$	-2.075	-0.209	0.096
	(-1.21)	(-1.36)	(0.64)
Capital account reform$_{it-4}$*S$_j$	-0.839	-0.184	-0.076
	(-1.14)	(-1.13)	(-1.12)
Capital account reform$_{it-5}$*S$_j$	-1.258**	-0.090	-0.127**
	(-2.01)	(-0.65)	(-2.11)
Medium-term differential effect	-4.889***	-2.229**	-3.457**
F-test medium-term effect	6.52	3.81	4.48
N	20,777	20,777	20,77

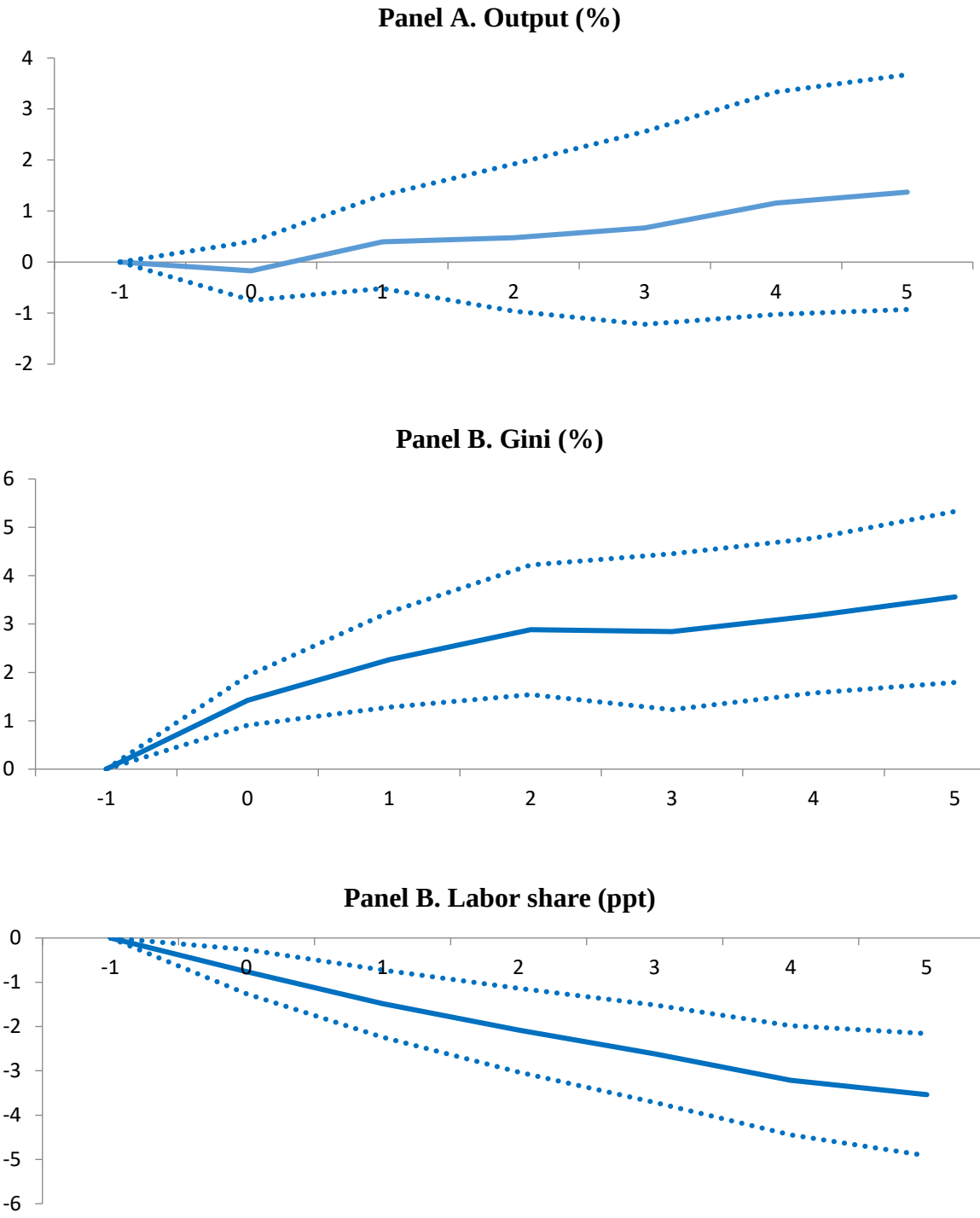
Note: T-statistics based on robust clustered standard errors at the country*sector level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. The medium-term differential effect denotes the effect of capital account liberalization episodes between a sector with high external financial dependence/layoff rate/elasticity of substitution (at the 75th percentile of the distribution) and a sector with low external financial dependence/layoff rate/elasticity of substitution (at the 25th percentile of the distribution). The estimates are based on equation (10).

Table 7. The Medium-Term Effect of Capital Account Liberalization on Sectoral Output and Labor Share (%)

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
		Controlling for							
	Baseline	Trade lib.	Current account lib.	Domestic fin. reforms	PMR reforms	EPL reforms	Union density	Technology	Sectoral growth
Output *EFD	1.937 (1.25)	2.225 (1.35)	2.489 (1.54)	2.373 (1.46)	2.489 (1.54)	2.386 (1.45)	1.865 (1.20)	1.730 (1.04)	
Labor share* EFD	-4.889*** (2.56)	-3.456*** (3.69)	-3.455*** (3.07)	-3.456*** (2.94)	-3.583*** (3.04)	-2.823*** (2.94)	-4.675** (2.51)	-3.135*** (2.59)	-4.033** (2.30)
Labor share* LR	-2.229** (1.95)	-3.164*** (2.79)	-3.405*** (2.78)	-3.237*** (2.56)	-3.469*** (2.76)	-2.2684** (2.31)	-2.289** (2.01)	-3.284** (2.34)	-2.209*** (2.77)
Labor share* EoS	-3.355*** (2.74)	-4.435*** (3.36)	-5.017*** (2.80)	-4.852** (2.51)	-5.092*** (2.64)	-3.911*** (2.81)	-5.203*** (2.75)	-5.188*** (2.65)	-4.283*** (2.81)

Note: T-statistics based on robust clustered standard errors at the country*sector level are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10%, respectively. We identify capital account reforms as episodes when, for a given country at a given time, the annual change in the Kaopen indicator exceeds by two standard deviations the average annual change over all the observations. EFD= external financial dependence; LR= layoff rate; EoS= elasticity of substitution. The medium-term differential effect denotes the effect of capital account liberalization episodes between a sector with high external financial dependence/layoff rate/elasticity of substitution (at the 75th percentile of the distribution) and a sector with low external financial dependence/layoff rate/elasticity of substitution (at the 25th percentile of the distribution). The estimates are based on equation (10).

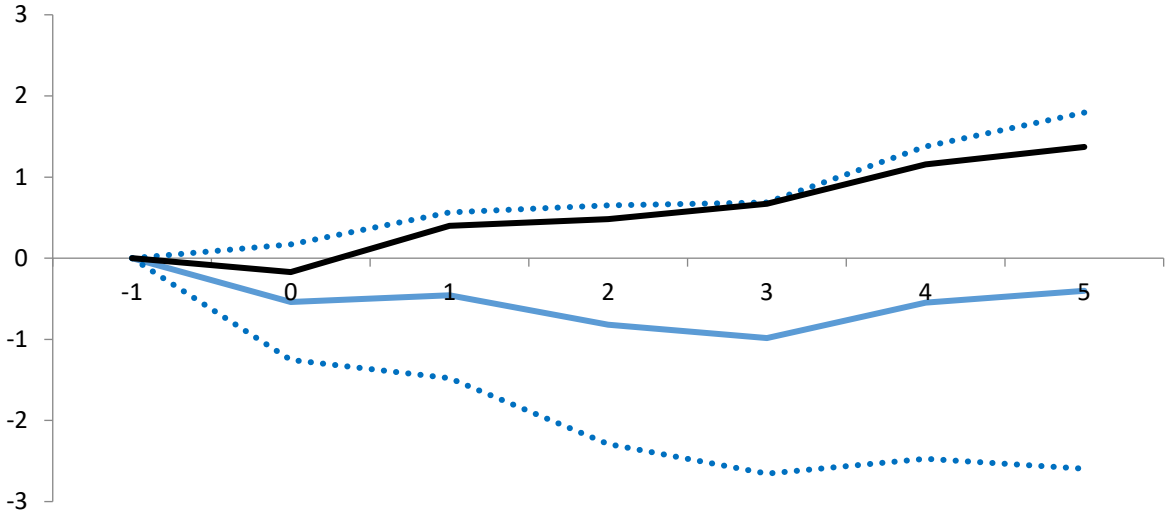
Figure 1. The Aggregate and Distributional Effects of Capital Account Liberalization



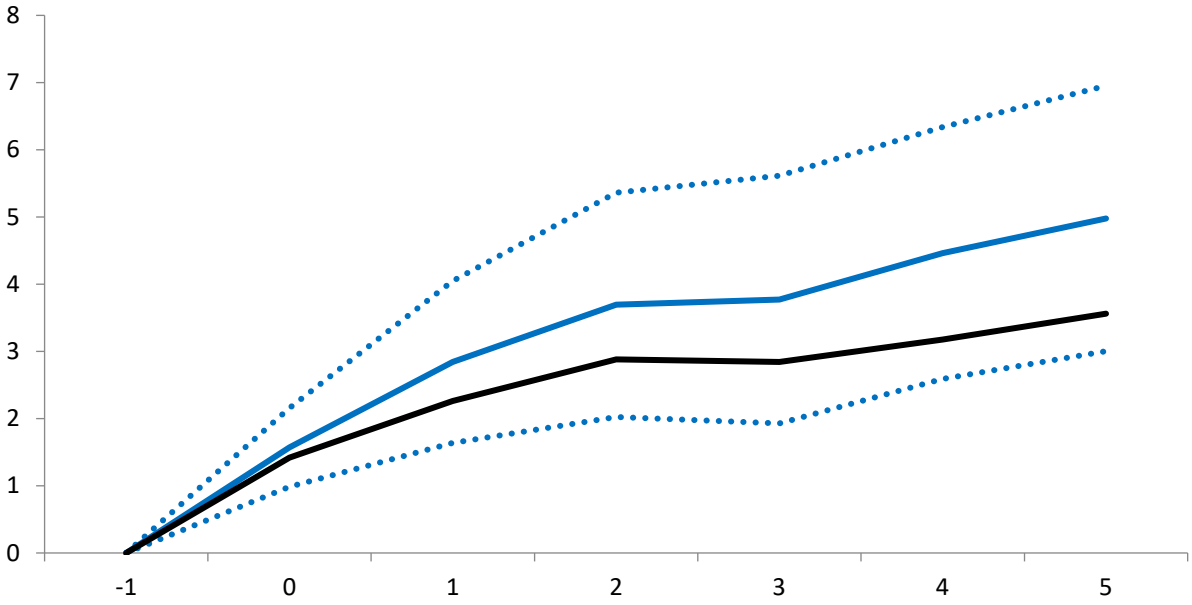
Note: The solid lines indicate the response of output (Gini and labor share) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 2. The Aggregate and Distributional Effects of Capital Account Liberalization—Additional Controls (%)

Panel A. Output



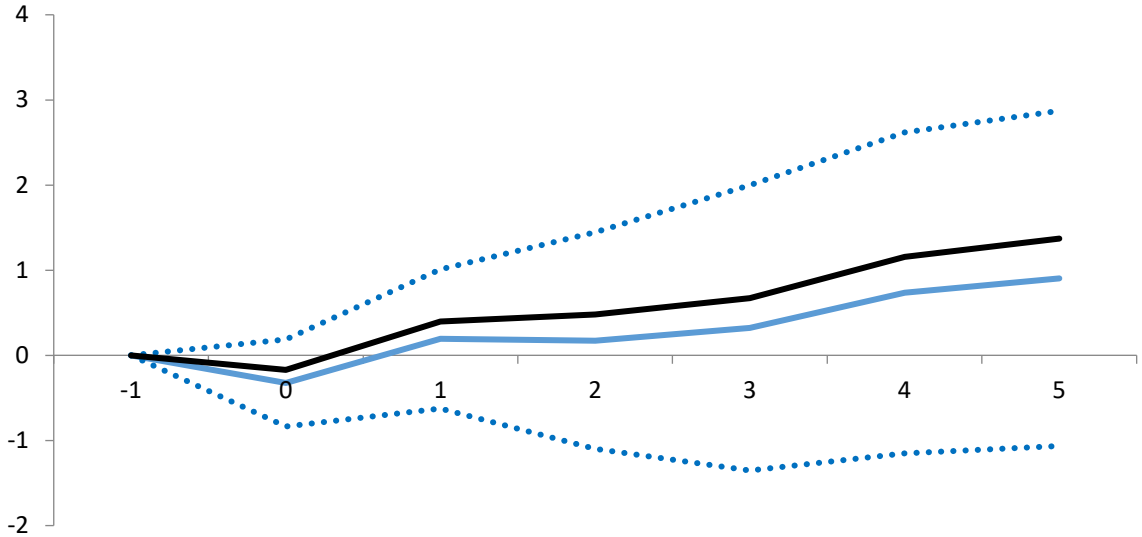
Panel B. Gini



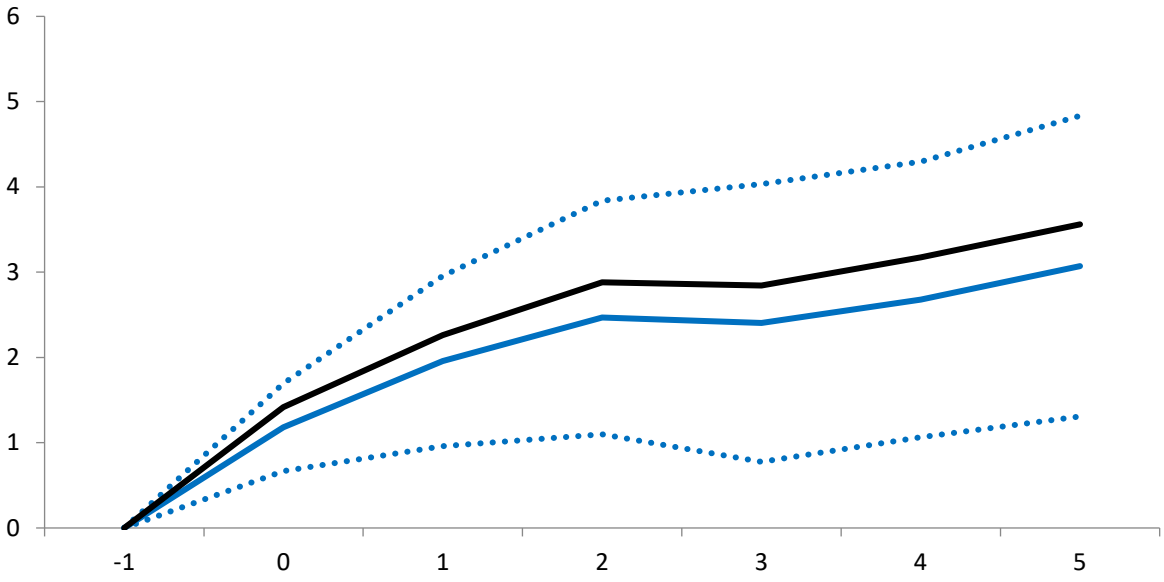
Note: The solid lines indicate the response of output (inequality) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 3. The Aggregate and Distributional Effects of Capital Account Liberalization—Controlling for Expected Future Growth (%)

Panel A. Output

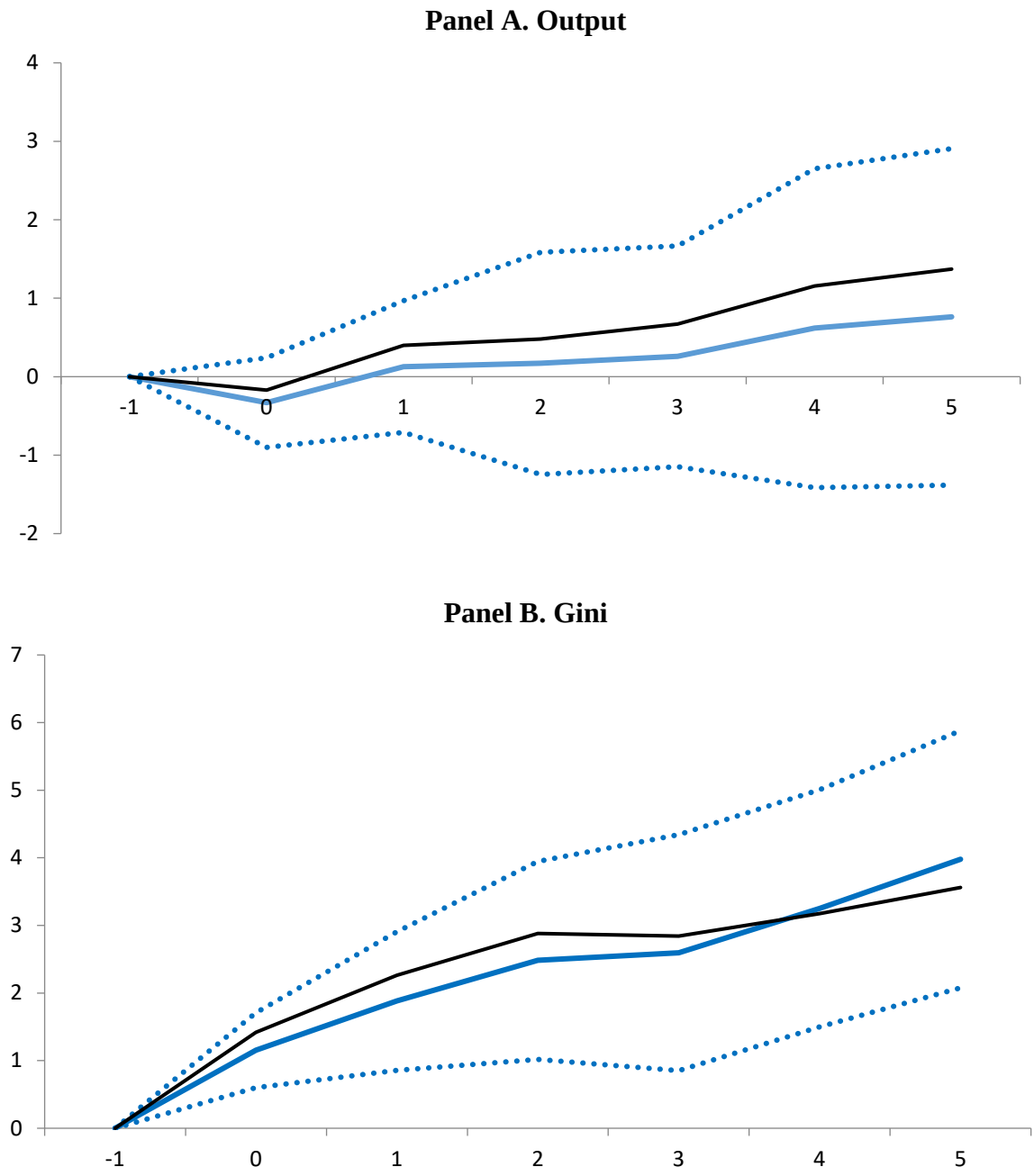


Panel B. Gini



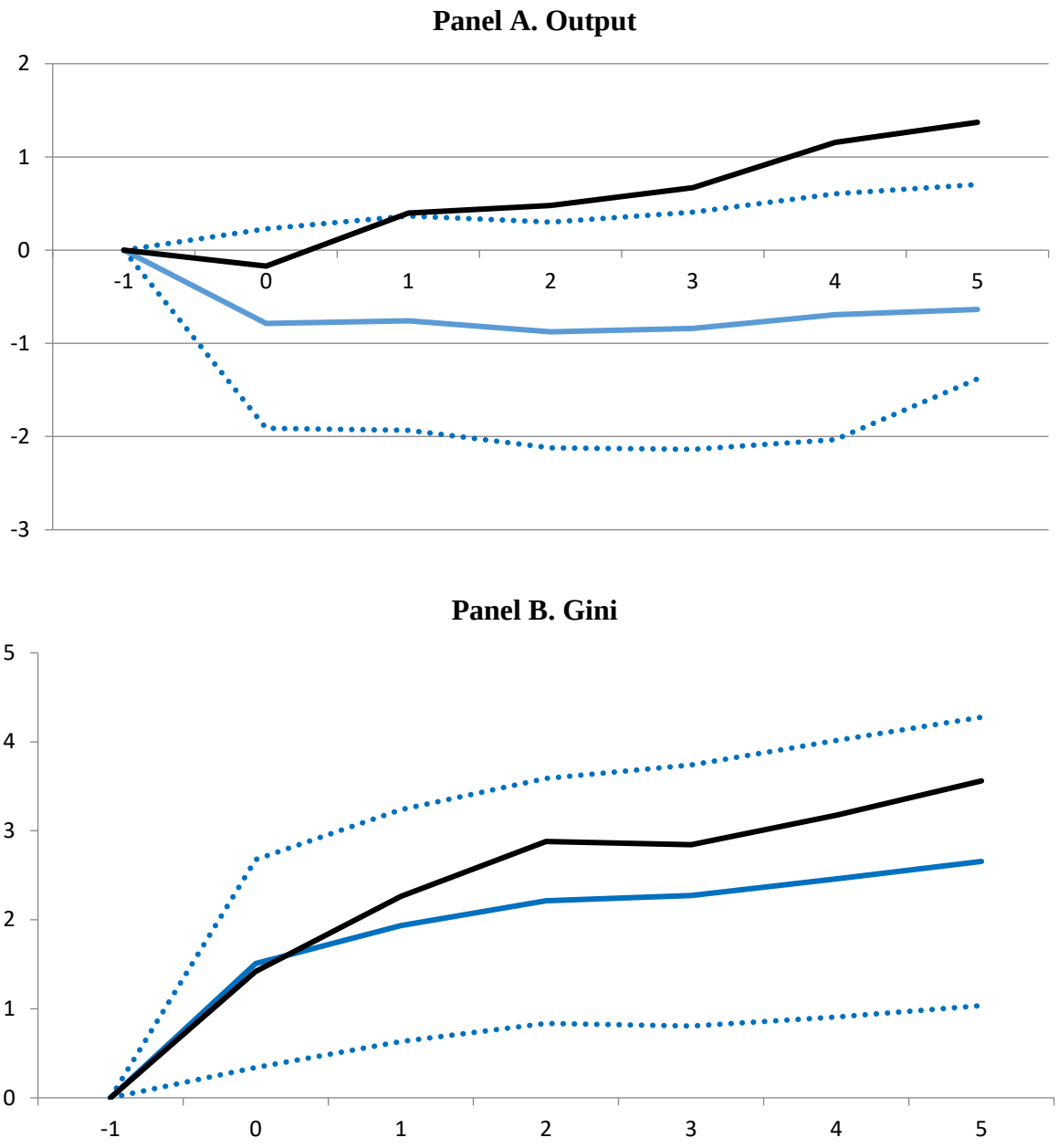
Note: The solid lines indicate the response of output (inequality) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 4. The Aggregate and Distributional Effects of Capital Account Liberalization—Controlling for Two Lags of the Dependent Variables (%)



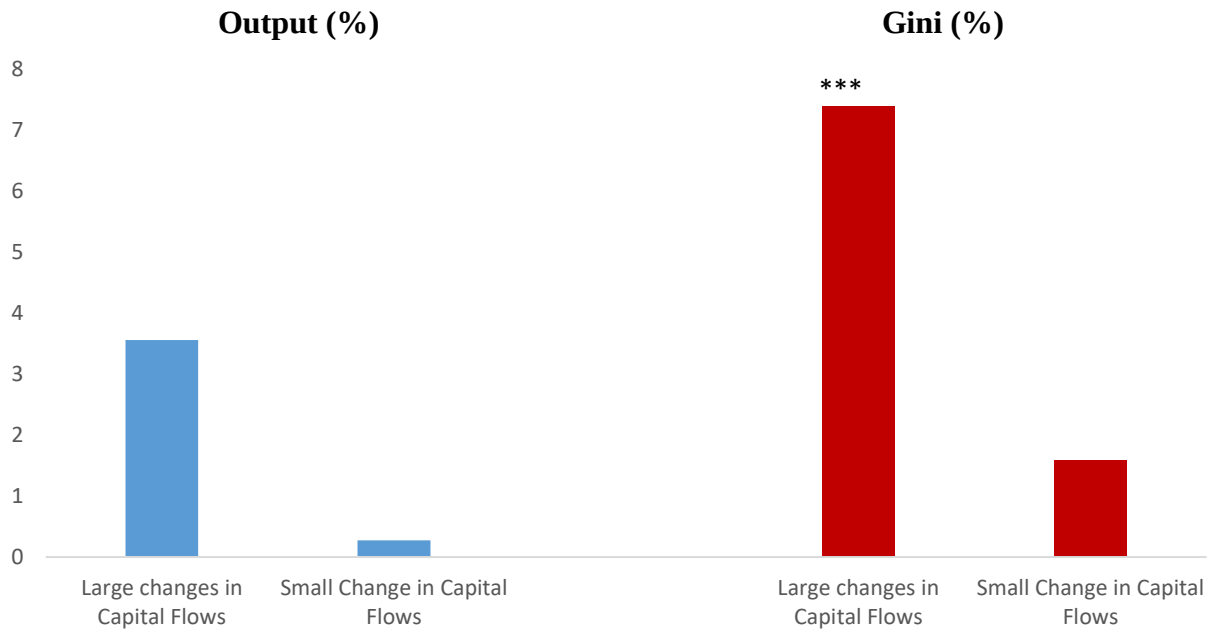
Note: The solid lines indicate the response of output (inequality) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 5. The Aggregate and Distributional Effects of Capital Account Liberalization—IV (%)



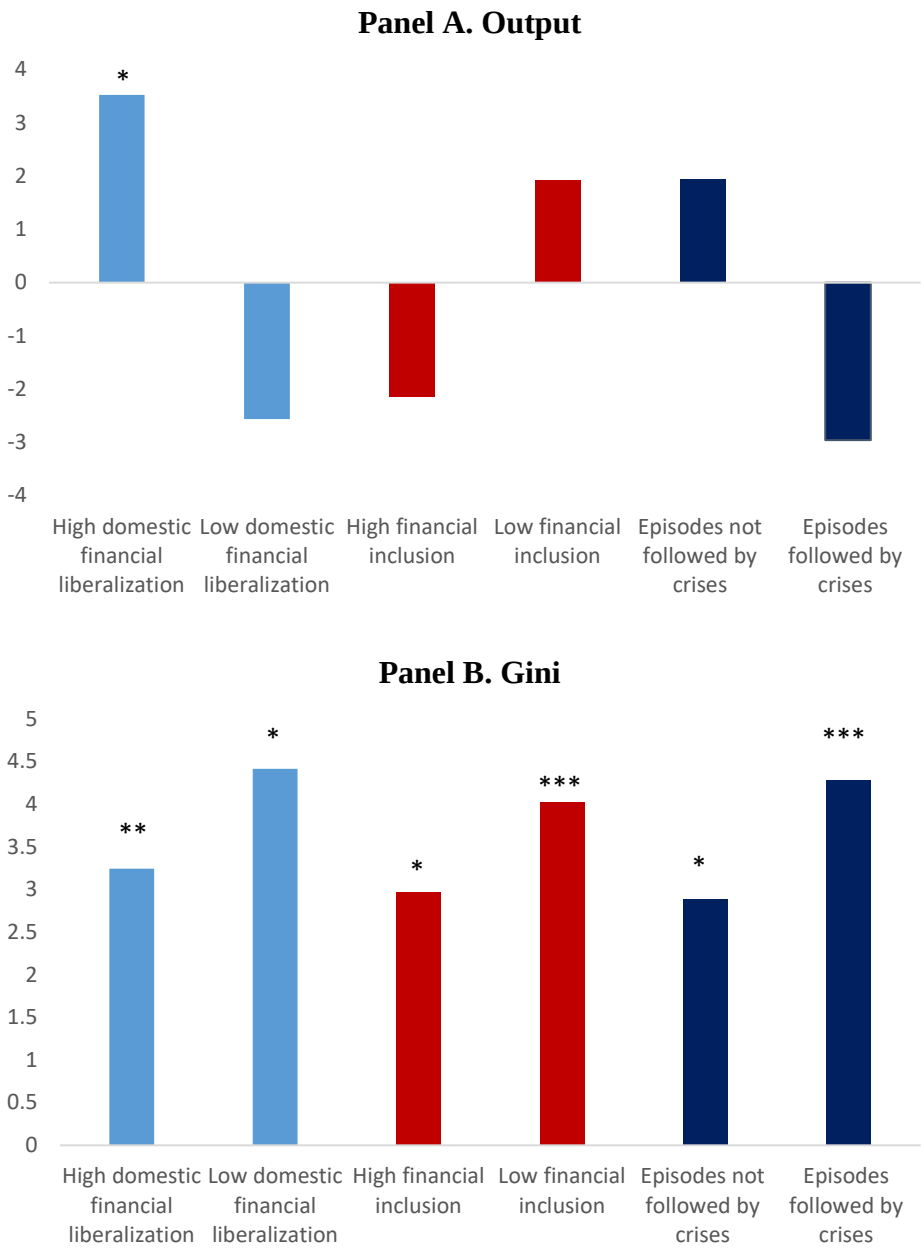
Note: The solid lines indicate the response of output (inequality) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 6. The Medium-Term Aggregate and Distributional Effects of Capital Account Liberalization—Large vs. Small Changes in Flows (%)



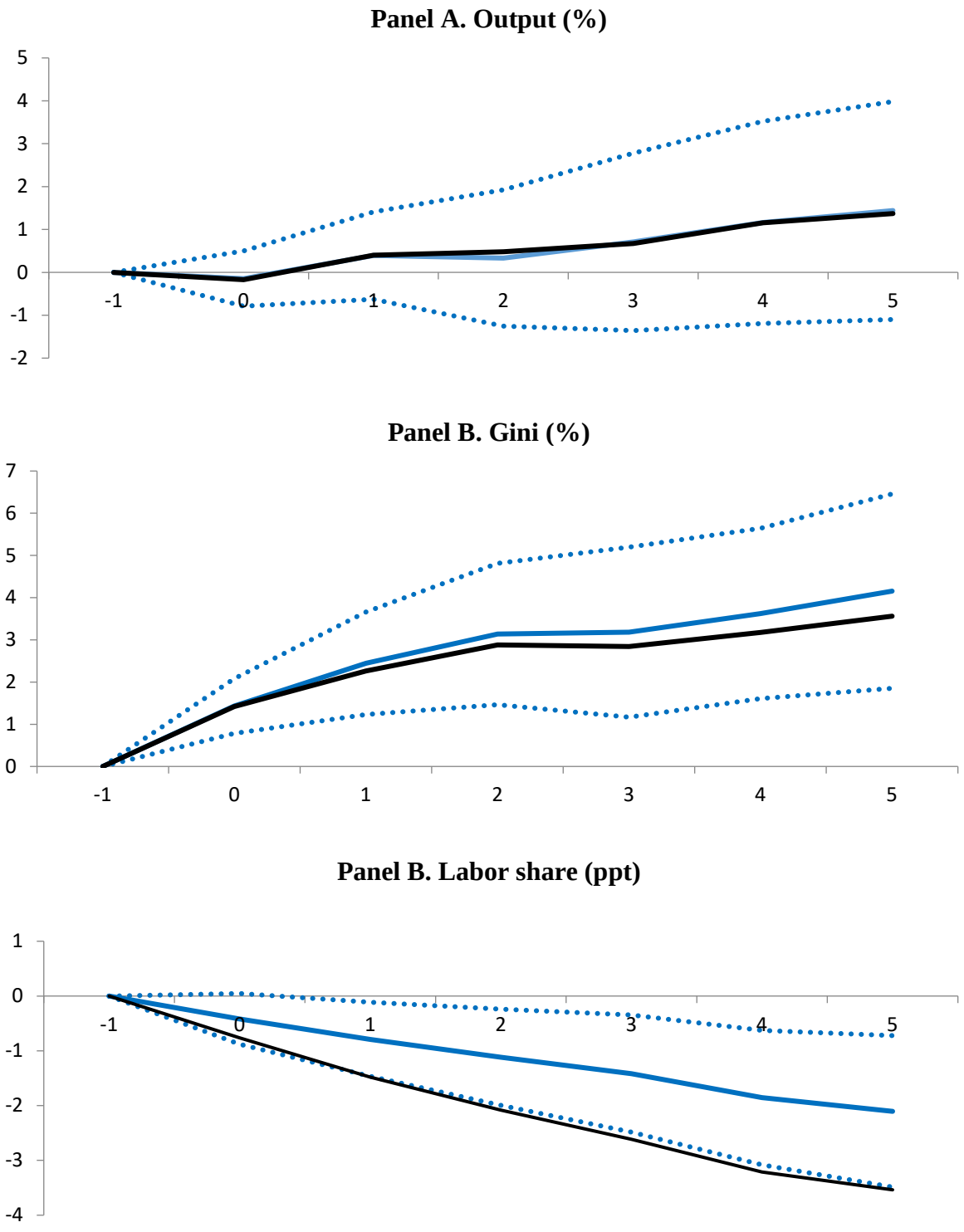
Note: Medium-term effects (that is, five years after the reform) are estimated as described in equation (8). ***, **, and * denote significance at 1%, 5% and 10%, respectively. Blue (red) bars denote the medium-term response (that is, five years after the reform) of output (inequality). We define flows as the cumulative five-year change in total asset and liabilities as a percentage of GDP after the reform.

Figure 7. The Medium-Term Aggregate and Distributional Effects of Capital Account Liberalization—The Role of Institutions and Crises (%)



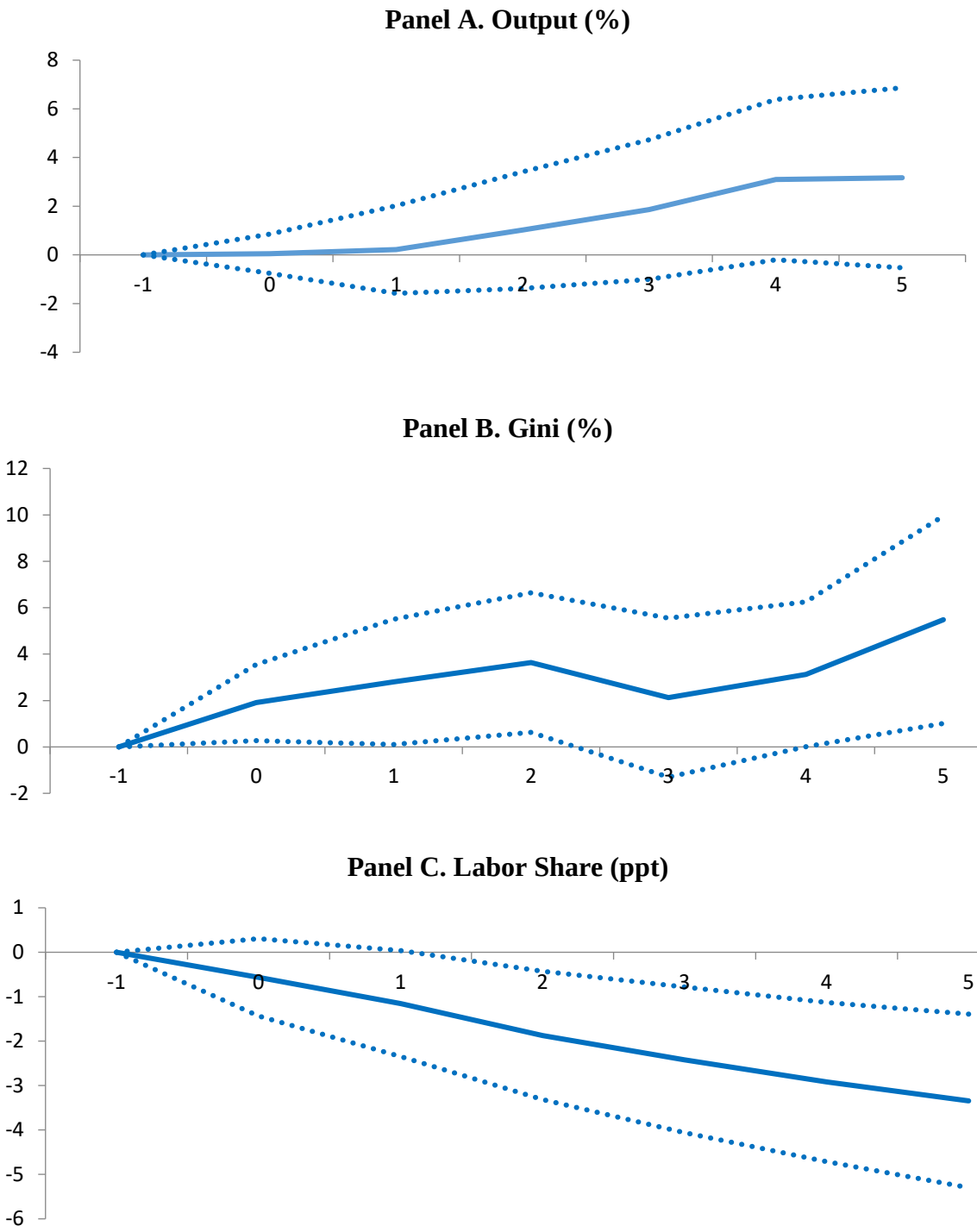
Note: We estimate medium-term effects (that is, five years after the reform) as described in equation (9). ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Figure 8. The Aggregate and Distributional Effects of Capital Account Liberalization—Excluding Years of the Great Recession (2008 and 2009) and its Aftermath



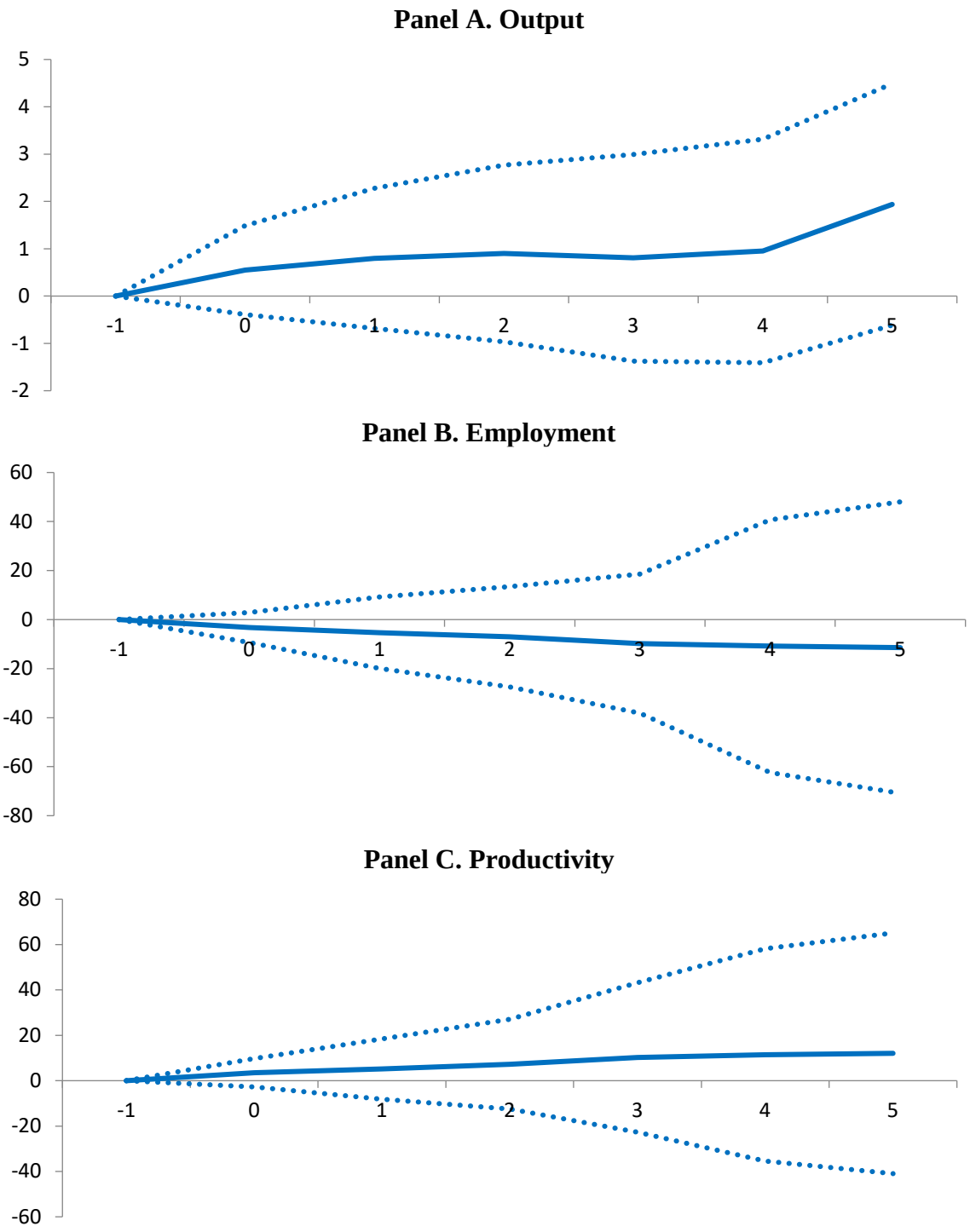
Note: The solid lines indicate the response of output (Gini and labor share) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

Figure 9. The Aggregate and Distributional Effects of Capital Account Liberalization—23 advanced countries covered in the sectoral analysis



Note: The solid lines indicate the response of output (inequality) to a capital account liberalization episode; the dotted lines correspond to 90% confidence bands. The solid black lines denote the baseline effect reported in Figure 1. The x-axis denotes time. t=0 is the year of the reform. The estimates are based on equation (7).

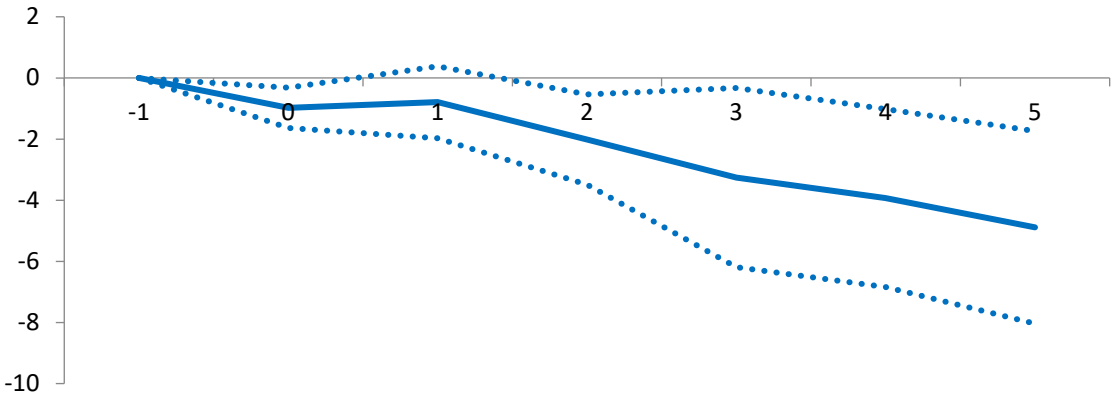
Figure 10. The Differential Effect of Capital Account Liberalization Episodes on Sectoral Output and its Components (%)



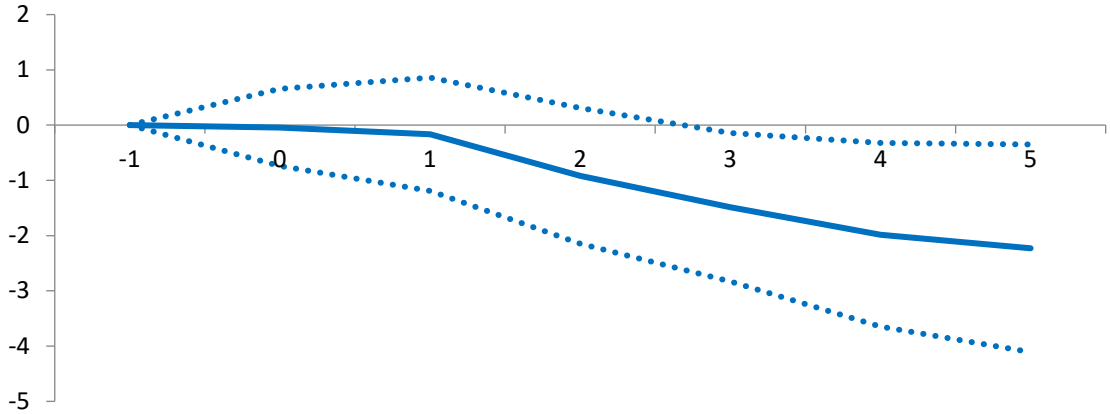
Note: The estimates are based on equation (9). The solid line denotes the differential effect of capital account liberalization episodes between a sector with high external financial dependence (at the 75th percentile of the distribution) and a sector with low external financial dependence (at the 25th percentile of the distribution). The dotted lines indicate the 90% confidence interval based on standard errors clustered at the country–sector level.

Figure 11. The Differential Effect of Capital Account Liberalization Episodes on the Labor Share (Percentage Points)

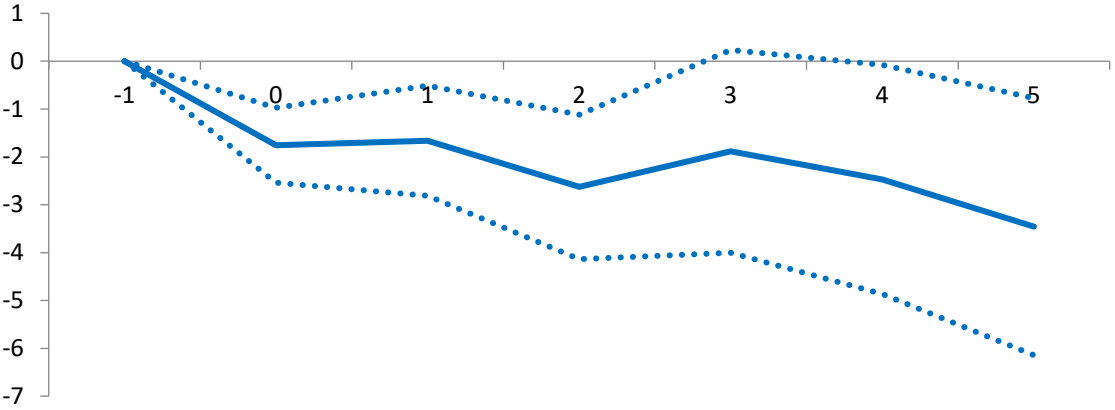
Panel A. Based on External Financial Dependence



Panel B. Based on the Natural Layoff Rate



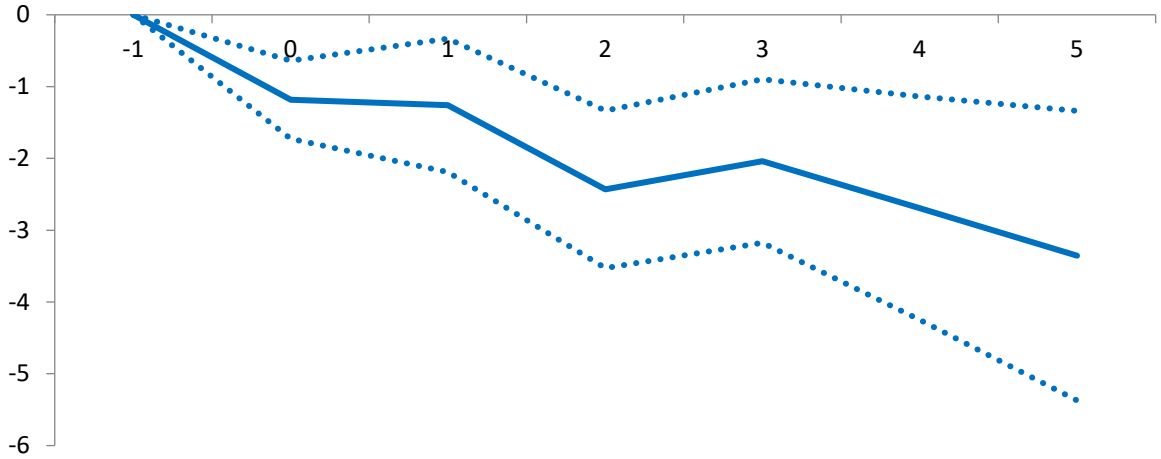
Panel C. Based on the Elasticity of Substitution



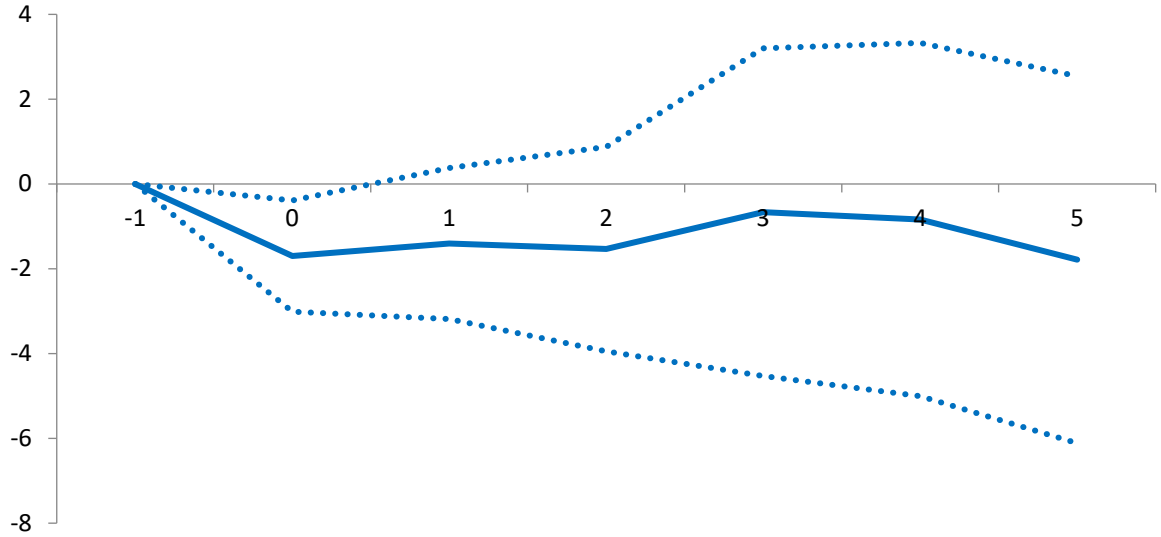
Note: The estimates are based on equation (9). The solid line denotes the differential effect of capital account liberalization episodes between a sector with high external financial dependence (at the 75th percentile of the distribution) and a sector with low external financial dependence (at the 25th percentile of the distribution). The dotted lines indicate the 90% confidence interval based on standard errors clustered at the country–sector level.

Figure 11. The Differential Effect of Capital Account Liberalization Episodes on the Labor Share (Percentage Points)—Continued

Panel C1. Based on the Elasticity of Substitution for Sectors with Elasticity Higher than 1



Panel C2. Based on the Elasticity of Substitution for Sectors with Elasticity Lower than 1



Note: The estimates are based on equation (9). The solid line denotes the differential effect of capital account liberalization episodes between a sector with high external financial dependence/layoff rate/elasticity of substitution (at the 75th percentile of the distribution) and a sector with low external financial dependence/layoff rate/elasticity of substitution (at the 25th percentile of the distribution). Dotted lines indicate the 90% confidence interval based on standard errors clustered at the country–sector level.