Global or Country Business Cycles: Developed versus Developing Countries

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Using a multi-level factor model, we estimate a global factor and country factors using the real macroeconomic variables of 71 countries from 1970 to 2018. The global factor successfully captures economic fluctuations in the world economy and primarily comoves with the business cycles of developed countries. Over time, the importance of the global factor in developed countries' business cycles has risen, while the share of economic fluctuations accounted for by the global factor has changed little and remains low among developing countries. Financial openness appears to be particularly important in promoting the global synchronization of business cycles after 1990.

Keywords: International business cycle, Globalization, Factor model

JEL Classification: C32, E32, F41, F44

I. Introduction

We have noticed rapid globalization in international trade and financial flows for the last several decades. Researchers have long been interested in whether business cycles are more synchronized across countries during the modern period of globalization. One strand of business cycle synchronization literature focuses on the simple descriptive measures of synchronization, such as the cross-country correlation coefficients between macroeconomic variables. Scholars such as Kose *et al.* (2003b), Heathcote and Perri (2004), Imbs (2004),

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Baxter and Kouparitsas (2005), Imbs (2006), Kalemli-Ozcan *et al.* (2013), and Cesa-Bianchi *et al.* (2019) construct measures of international output correlation and examine how cross-country comovement is affected by trade and financial globalization. Another strand employs econometric methods on the basis of factor analysis to directly identify a proxy for "world business cycle." Gregory *et al.* (1997), Kose *et al.* (2003a), Kose *et al.* (2008), Aruoba *et al.* (2011), and Kose *et al.* (2012) estimate common factors that drive global business cycle comovement and examine its contribution to economic fluctuations.

By applying the multi-level factor model of Choi *et al.* (2018) to the real macroeconomic variables of 71 countries from 1970 to 2018, we estimate an unobserved global factor that affects the macroeconomic series in all countries, an unobserved country factor that only affects variables within a given country, and an idiosyncratic component specific to each series. We investigate the importance of global and country factors in driving macroeconomic fluctuations in developed versus developing countries and explore how their relative importance has evolved as cross-country trade and financial linkages have increased over time.

The estimate of the global factor successfully captures economic fluctuations in the world economy. It closely comoves with the business cycle of developed countries and explains a much larger share of macroeconomic fluctuations in developed countries than it does in developing countries. Dividing the sample into the two subperiods of 1971 to 1990 and 1991 to 2018 indicate that the global factor has become increasingly important in business cycle fluctuations in the recent period of globalization, but only in developed countries. By contrast, the share of the developing countries' economic fluctuations accounted for by the global factor has changed little and remains low. As for the importance of country factors, it tends to fall over time for developed countries but remains equally high or even rises for developing countries in the recent period of globalization. The macroeconomic fluctuations of developed countries have become more synchronized to what is called the "world business cycles" as globalization in trade and financial flows has intensified. On the contrary, developing countries' business cycles can be largely characterized as "country cycles" shaped by country-specific disturbances.

We also run regressions of the global and country factors' variance

shares on the measure of trade and financial openness. Trade integration and financial liberalization have increased the relative importance of the global factor in shaping countries' business cycles. Thus, countries more open to international trade and financial flows tend to be more connected with the global business cycle, but countries less exposed to international linkages are more likely to have their own country cycles. Financial openness, rather than trade openness, appears to be particularly important in promoting the global synchronization of business cycles after 1990. Financial liberalization has been accelerated among developed countries since the 1990s. By contrast, financial openness appears to have been stagnant in developing countries except for a short period of increase during the early 1990s. This circumstance explains why business cycles are not synchronized with the world business cycle in developing countries which maintain many restrictions on cross-border financial flows.

Most existing studies on global business cycles employ a few macroeconomic variables to extract global factors. Gregory *et al.* (1997), Kose *et al.* (2003a), Kose *et al.* (2008), and Kose *et al.* (2012) only included output, consumption, and investment. We employ a more comprehensive set of seven macroeconomic variables per country (gross domestic product [GDP], private consumption, investment, government consumption, exports, imports, and real effective exchange rates) to better capture overall economic activity. With few exceptions, previous studies focus only on industrialized countries. Gregory *et al.* (1997), Kose *et al.* (2008), and Aruoba *et al.* (2011) studied G-7 business cycles. By contrast, we have a broader and more diverse set of countries, thereby enabling us to compare business cycles across developed and developing country groups. Aruoba *et al.* (2011) employed up to six macroeconomic variables in extracting global components, but they focused only on G-7 countries. Kose *et al.* (2012) analyzed developed and developing countries but only included a narrower set of macroeconomic variables including output, consumption, and investment.

This paper is organized as follows. In Section II, we describe the methodology and data used in this analysis. Section III presents the empirical results for factor estimation, variance decomposition, and regression analysis. Section IV concludes this work.

II. Methodology and Data

A. Multi-level Factor Model

Using the multi-level factor model by Choi *et al.* (2018), we separately estimated (i) a global factor common to all variables in all countries in the sample, (ii) a country factor common to all variables in each country, and (iii) an idiosyncratic component for each series from a set of macroeconomic variables in multiple countries. The multi-level factor model can be written as

$$x_{ijt} = \gamma_{ij}G_t + \lambda_{ij}F_{it} + e_{ijt}, \tag{1}$$

where x_{ijt} is the jth macroeconomic variable of country i at time t. G_t is an unobserved global factor that affects the macroeconomic series in all countries, F_{it} is an unobserved country factor for country i that affects the variables within that country, γ_{ij} and λ_{ij} are unobserved factor loadings for series j in country i, and e_{ijt} is an idiosyncratic component for each series. The global factor can be interpreted as global shocks, and the country factors are proxies for country-specific shocks.

The model is estimated using the following sequential procedure. In the initial step, the global factors are estimated by canonical correlation analysis with the data from two countries. Using the initial estimator of the global factors, the principal component estimators of the country factors are constructed. In the third and fourth steps, the estimates of the global and country factors are updated by the principal component method on the basis of the entire sample. The principal component estimators consistently estimate the spaces of the global and country factors and are normally distributed in the limit. Choi *et al.* (2018) show that this method works well in finite samples. The estimates of global factors, country-specific factors, and idiosyncratic components are orthogonal with one another in this multi-level factor model. The number of global factors and the numbers of country factors in each country are assumed to be one each.[1]

[1] We could select the number of factors using the information criteria proposed by Choi *et al.* (2018). In the selection procedure, however, if we allow the maximum numbers of global factors and those of country factors in each country to be two in the sample of 71 countries, the number of cases to be

B. Data

We use annual real macroeconomic variables, including GDP, private consumption, investment, government consumption, exports, imports, and real effective exchange rates for 71 countries for the period 1970 to 2018. The sample includes 25 developed countries and 46 developing countries.[2] As the multi-level factor model requires a balanced panel, the choice of sample countries is made on the basis of data availability from 1970. Eastern European countries such as the Czech Republic, Hungary, and Poland are excluded in our sample because their data are available only from 1990. The division of the country groups is based on the World Bank's income classification.

The data on the national account are collected from the World Development Indicators database of the World Bank. The real effective exchange rate data are from the updated database of Darvas (2012). The data are transformed to growth rates by taking the log differences to ensure stationarity. Following factor analysis literature, all series are standardized prior to factor estimation (the sample mean is removed and the variance is standardized to one). This standardization guarantees that all series are equally weighted in the search for common factors. Otherwise, series exhibiting large variances are likely to disproportionately affect common factors.

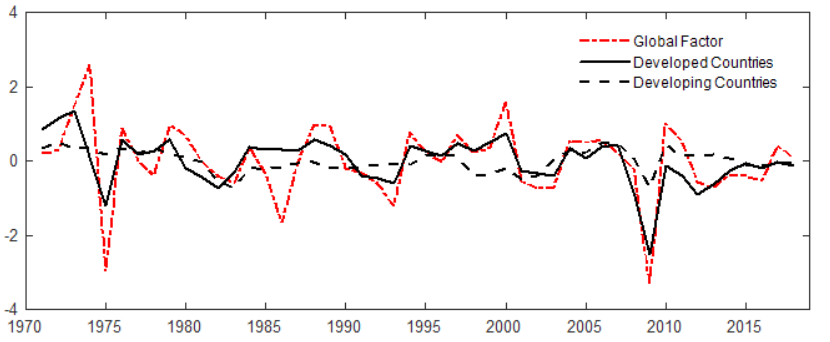
examined becomes 2^{71}, a figure which is computationally infeasible. As we only include real variables, it would be natural to believe that a single real factor drives business cycles in the world and in each country.

[2] The sample of developed countries include Australia, Austria, Belgium, Canada, Chile, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Developing countries include Algeria, Argentina, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, China, Colombia, Congo Republic, Costa Rica, Cote d'Ivoire, the Dominican Republic, Ecuador, Egypt, El Salvador, Gabon, Guatemala, Guyana, India, Indonesia, Jamaica, Kenya, Madagascar, Malawi, Malaysia, Mexico, Morocco, Niger, Pakistan, Panama, Paraguay, Peru, the Philippines, Rwanda, Senegal, Singapore, South Africa, Sri Lanka, Thailand, Togo, Tunisia, Turkey, and Uruguay.

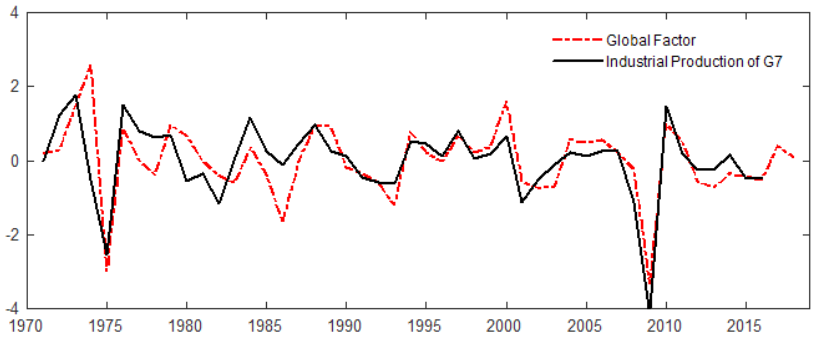
III. Common Factors and Global versus Country Business Cycles

A. Global Factor Estimate

Panel (A) of Figure 1 plots the estimated global factor with the mean changes in GDP growth rates in developed and developing country groups.[3] The estimated global factor appears to successfully capture international business cycle fluctuations. In particular, the global



(A) Global Factor and GDP Growth



(B) Global Factor and G-7 Industrial Production Growth

FIGURE 1
GLOBAL FACTOR ESTIMATE

[3] GDP growth rates have been standardized to a zero mean and unit variance following factor analysis literature.

factor clearly shows the depth and severity of global recessions. The estimated global factor declines sharply in deep recession in the mid-1970s associated with the oil price shock and drops more substantially in the global recession in the late-2000s associated with the global financial crisis. Although it comoves with the mean GDP growth rates in developed and developing countries, it is more closely correlated with the mean GDP growth rates in developed countries.

Panel (B) compares the global factor and the growth rate of the industrial production index of G-7 countries collected from the OECD. The global factor closely comoves with the growth rate of the G-7 industrial production index. The correlation coefficient between the global factor and the growth rate in the G-7 industrial index is 0.74. The G-7 industrial production index may be regarded as representative of the international business cycle, and, thus, the estimated global factor successfully reflects a global business cycle.

B. Relative Importance of Global and Country Factors

We perform variance decompositions to measure the relative contributions of the global factor and country factors to the business cycle fluctuations in each country. The variance of each macroeconomic variable can be written as follows:

$$\mathrm{var}(x_{ijt}) = \gamma_{ij}^2 \ \mathrm{var}(G_t) + \lambda_{ij}^2 \ \mathrm{var}(F_{it}) + \mathrm{var}(e_{ijt}). \tag{2}$$

No covariance term occurs in this decomposition because the global, country, and series-specific components are orthogonal to one another. The share of the variance of each macroeconomic variable attributable to the global factor can be computed as $\gamma_{ij}^2\mathrm{var}(G_t)$ / $\mathrm{var}(x_{ijt})$. Similarly, the share accounted for by the country factor is $\lambda_{ij}^2\mathrm{var}(F_{it})$ / $\mathrm{var}(x_{ijt})$. The remaining fraction of the variance is attributable to the idiosyncratic movement of each macroeconomic series. We compute the variance shares of each variable in each country attributable to the global and country factors.

Table 1 displays the median variance share of the global component for each country group. The global factor plays a disproportionately important role in business cycle fluctuations in developed countries than it does in developing countries. The global factor explains 19% of the GDP volatility among developed countries but explains only 1.7% of

Table 1
Median Variance Shares Explained by the Global Factor

	Developed Countries	Developing Countries
Gross Domestic Product	0.191	0.017
Household Consumption	0.081	0.026
Investment	0.190	0.035
Government Consumption	0.013	0.024
Exports	0.406	0.086
Imports	0.453	0.077
Real Effective Exchange Rate	0.039	0.016

output fluctuations in developing countries. The global factor appears less important in household consumption because the share accounted for by the global factor is 8% in developed countries and 2.6% in developing countries. The global factor's share in investment variance is 19% in developed countries, a figure that is more than five times that in developing countries at 3.5%. The fraction of government consumption volatility because of the global factor is small in both country groups. As expected, exports and imports are largely accounted for by the global factor in developed countries where the variance shares reach 41% (exports) and 45% (imports). For developing countries, the shares of export and import fluctuations attributable to the global factor are quite low at approximately 8%, much lower than those for developed countries even though they are higher than other macroeconomic variables in developing countries. The shares of real effective exchange rate fluctuations explained by the global factor are surprisingly small for both country groups at 4% and 2% for developed and developing countries, respectively.

Table 2 shows the median variance shares accounted for by country factors in each country group. Overall, the country factors account for larger shares of major economic variable fluctuations than the global factor does, except for exports and imports in developed countries. The median share of the GDP variance explained by the country factors in developed countries is 49%. The share is much higher in developing countries at 66%, thereby suggesting that country-specific shocks play more important roles in driving GDP fluctuations in developing countries than they do in developed countries. The consumption variance shares explained by the country factors are

Table 2
Median Variance Share Explained by the Country Factor

	Developed Countries	Developing Countries
Gross Domestic Product	0.493	0.655
Household Consumption	0.581	0.473
Investment	0.418	0.484
Government Consumption	0.288	0.290
Exports	0.075	0.191
Imports	0.147	0.568
Real Effective Exchange Rate	0.208	0.074

58% in developed and 47% in developing country groups. The shares of investment variance attributable to country factors are 41.8% and 48.4% in developed and developing countries, respectively. The country factor shares for government consumption are approximately 30% in both developed and developing countries. As for the limited contributions of the global factor to government consumption, that consumption is mainly determined by exogenous factors independent of the global shocks or country-wide shocks. For exports and imports, the contributions of country factors are quite small in at developed countries at 7.5% and 14.7% relative to the large contribution of the global factor at 40.6and 45.3% (Table 1). In developing countries, country factors play a more important role when explaining fluctuation in exports and imports at 19.1% and 56.8%, respectively, than the global factor at 8.6% and 7.7%. Note that imports rather than exports are largely determined by country factors in developing countries. Real effective exchange rate fluctuations are largely explained by the idiosyncratic component of the exchange rate itself, as the combined shares of the global and country factors are only 24.7% and 9.0% for developed and developing country groups, respectively.

Overall, the global factor accounts for a significant fraction of business cycle fluctuations in developed countries but plays a less important role in developing countries. This implies that a "global business cycle" is a phenomenon only for developed countries. Country cycles captured by country factors appear to be important in developed and developing countries, despite the higher shares in developing countries compared to developed countries.

C. Evolution Over Time

In the previous subsection, we weighed the relative importance of the global versus country specific factors for explaining economic fluctuations from 1971 to 2018. Over the same period, we observed rapid advances in globalization in terms of international trade and global financial flows. It would be natural to expect that the patterns of international business cycle synchronicity might have changed as globalization evolved. To analyze how the relative shares of the global versus country factors in macroeconomic fluctuations have evolved over time, we divided the sample into the two subperiods (1971 to 1990 and 1991 to 2018). The division of the sample period is made according to the observation that the 1990s marks the period when international trade and financial flows began to increase markedly. Several countries exerted efforts toward lifting restrictions on current and financial account transactions since the 1990s. We estimated the factor model and performed variance decompositions for the two subperiods. Figure 2 visualizes the changes in the median shares of the variances accounted for by the global factor in developed and developing country groups over the two subperiods. The results are strikingly different across the two country groups.

In developed countries, the global factor has become increasingly important in business cycle fluctuations over time as globalization has intensified. The shares of GDP and consumption fluctuations accounted for by the global factor increased sharply in the second subperiod,

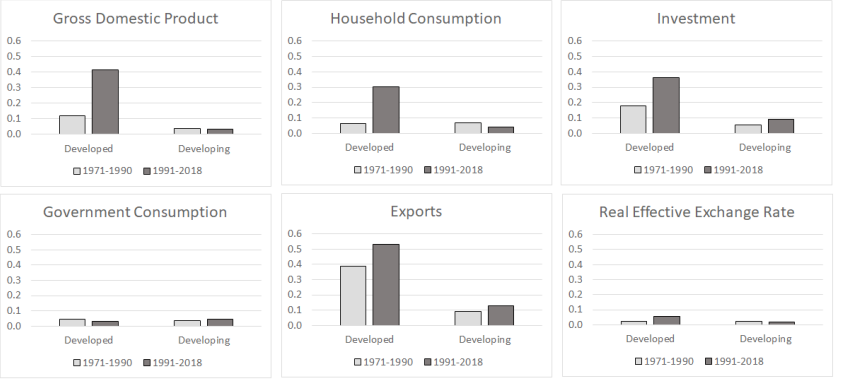


Figure 2

Median Variance Share Explained by the Global Factor by Subperiods

thereby suggesting a closer business cycle synchronization among developed countries over time. The share attributable to the global factor more than tripled for the GDP from 11.8% to 41.5% and rose by more than five times for the consumption from 6.2% to 30.3%. For government consumption, the importance of the global factor remains insignificantly small throughout the two subperiods. The median shares of the variance of investment, exports, imports, and the real effective exchange rate attributed to the global factor all rose substantially in the second subperiod among developed countries; thus, the synchronization in major economic variables has deepened for developed countries after 1990.[4]

The group of developing countries shows a strikingly different picture compared to the group of developed countries. The share of variances accounted for by the global factor barely increased and remains small at less than 10% for most real macroeconomic variables. The shares of GDP and consumption fluctuations attributable to the global factor fell slightly from 3.7% to 3.2% for the GDP and from 6.8% to 4.0% for the consumption across the two sample periods. The importance of the global factor for investment and government consumption rose marginally, but remains below 10% of the total variance. For exports and imports, the fraction of the variance explained by the global factor rose to the levels slightly greater than 10% in the second subperiod, but the importance of the global factor is substantially lower for developing countries than for developed countries. Only 2% of the movement in real effective exchange rates in developing countries is accounted for by the global factor in both subperiods.

Figure 3 plots the median shares of the variances attributable to the country factors for the two subperiods. The importance of the country factors for developed countries tends to fall over time but remains equally high or even rises for developing countries in the second subperiod.

In developed countries, the most notable declines in the importance of the country factors are observed in the GDP and consumption in which the role of the global factor rises most substantially. Across the two subperiods, the share of GDP variance explained by country

[4] The figure for imports is similar to that for exports and is not reported to conserve space.

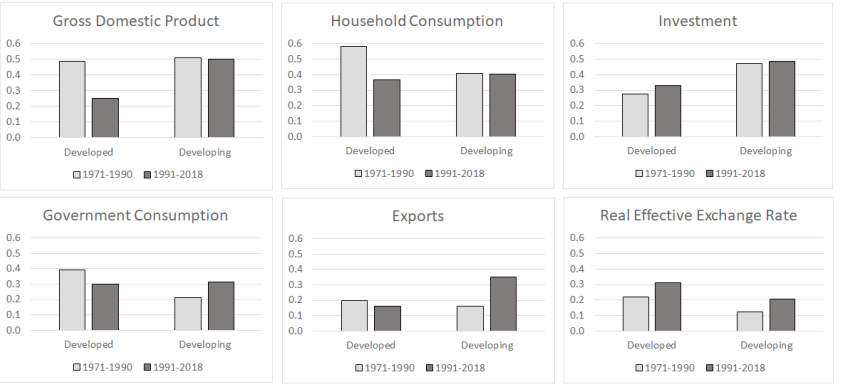


FIGURE 3
MEDIAN VARIANCE SHARE EXPLAINED BY THE COUNTRY FACTOR BY SUBPERIODS

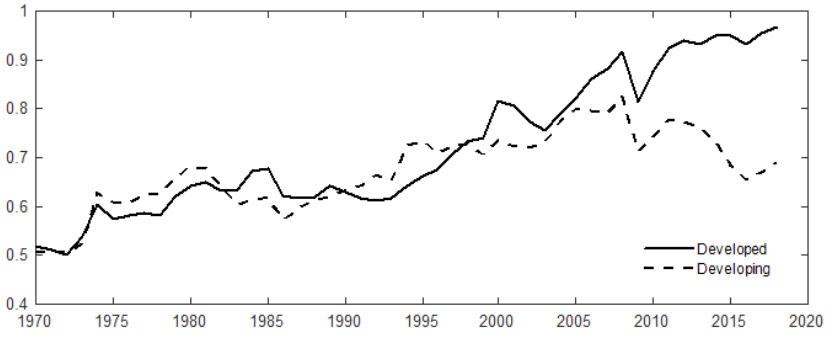
factors fell from 48.9% to 25.3%, and that of consumption declined from 58.6% to 36.6% in developed countries. The median share of GDP variance attributable to the global factor (41.5%) exceeds the share explained by country factors (25.3%) during the globalization period in developed countries. Thus, the importance of country factors in other macroeconomic variables changes moderately in developed countries.

In developing countries, the importance of the country factors in GDP, consumption, and investment did not fall in the second subperiod, thereby suggesting that country-specific shocks remain as the main contributors to macroeconomic fluctuations. For government consumption, exports, and the real effective exchange rate, the importance of country factors rose during globalization. The share of variance accounted for by country factors rose most substantially in exports fluctuations. Considering the small contributions of the global factor to the macroeconomic fluctuations in both subperiods (Figure 2), developing countries' business cycles can be largely characterized as "country cycles" shaped by country-specific disturbances.

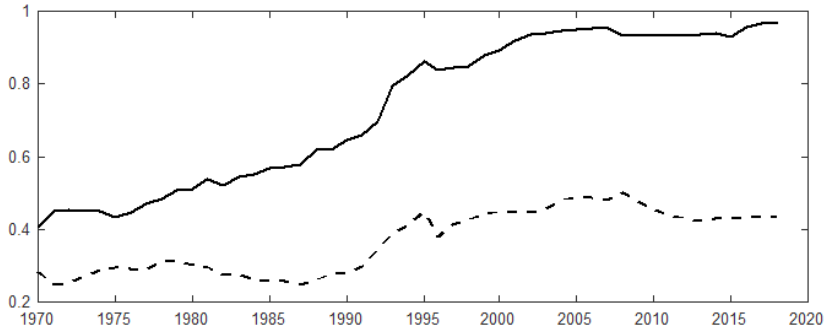
D. Globalization and Business Cycle Synchronicity

As global trade and financial linkages rise, one would expect business cycle synchronicity to also increase. However, greater synchronization has occurred only among developed countries. Developing countries do not appear to be more connected with other countries over time. To ascertain how globalization in the developed and developing world

has evolved, we examine the trade and financial openness in the two country groups. To measure trade openness, we compute the sum of exports and imports as a share of the GDP in each country. For financial openness, we use the Chinn-Ito index according to the restrictions on cross-border financial transactions normalized to a [0,1] scale. A larger index value corresponds to a more open financial account. Panel (A) of Figure 4 plots the mean trade openness in each sample. On average, trade amounted to approximately 50% of GDP for the developed and developing countries in the early 1970s. Trade openness has steadily risen among developed countries until recently, despite observed intermittent fluctuations in trade. The pace of increase has also been slower for developing than for developed countries. After the global recession in the late 2000s, trade has not recovered in



(A) Trade Openness



(B) Financial Openness

FIGURE 4

TRADE AND FINANCIAL OPENNESS

developing countries and the share of trade to GDP has declined to the level observed in the early 1990s.

Panel (B) of Figure 4 shows that mean financial openness has risen rapidly in the developed country group. The speed of the increase has been particularly fast in the 1990s. By contrast, financial openness in developing countries appear to have been stagnant except for a short period of increase during the early 1990s. Developing countries, on average, remain much less open to international financial transactions relative to developed countries.

To examine how trade and financial openness is associated with business cycle synchronicity, we run regressions of the variance share attributable to the global and country factors on openness measures. The main regressors of interest are the average trade and financial openness of each country. We also include the standard deviation in the real effective exchange rate to control for the volatility of economic activity, each country's initial GDP relative to the U.S. to control for the initial condition, and the regional dummies to further control for region-specific characteristics. Columns 1 through 3 of Table 3 report the cross-sectional regression results. The dependent variable in Column 1 is the variance share of each country's GDP explained by the global factor (Panel A) and by the country factors (Panel B) from 1971 to 2018. Columns 2 and 3 are the results for the two subperiods of 1971 to 1990 and 1991 to 2018, respectively. The regression results of the other macroeconomic variables are qualitatively similar to those of GDP and are thus not reported here.

The result in Panel A of Table 3 suggests that the share of GDP fluctuations explained by the global factor from 1971 to 2018 is significantly higher for countries with higher trade openness. When we divide the sample into the two subperiods, the trade channel does not seem to be important. Trade openness is not significant in either period despite the positiveness of the coefficients for both subperiods.

Financial openness is not significantly associated with the importance of the global factor in the entire sample period from 1971 to 2018. When focusing on the two subperiods separately, financial openness appears to have a strong positive association with GDP synchronicity with the global factor in the second subperiod. In other words, countries more open to financial flows have a higher degree of synchronization with the global business cycle, and financial linkages thus appear to be important for transmitting global shocks, particularly

TABLE 3
REGRESSION OF THE GDP VARIANCE DECOMPOSITION ON OPENNESS VARIABLES

	Cross-section per period			Each decade (pooled)
	1971–2018	1971–1990	1991–2018	
	A. Dependent Variable: Variance Share of Global factor			
Trade openness	0.059**	0.039	0.041	0.027
	(0.029)	(0.033)	(0.031)	(0.019)
Financial openness	0.049	0.041	0.206***	0.128***
	(0.052)	(0.082)	(0.063)	(0.041)
REER volatility	–0.000	0.000	–0.001	–0.001
	(0.000)	(0.001)	(0.001)	(0.000)
Relative GDP	0.029***	0.030**	0.052***	0.041
	(0.008)	(0.013)	(0.009)	(0.090)
Regional dummies	Yes	Yes	Yes	Yes
Observations	71	70	71	351
R-squared	0.615	0.287	0.753	0.096
	B. Dependent Variable: Variance Share of Country Factor			
Trade openness	–0.054	–0.134**	–0.071	–0.058*
	(0.058)	(0.057)	(0.063)	(0.031)
Financial openness	–0.128	0.089	–0.264**	–0.041
	(0.141)	(0.160)	(0.130)	(0.065)
REER volatility	–0.001	0.001	0.001	–0.000
	(0.001)	(0.002)	(0.003)	(0.001)
Relative GDP	0.006	0.011	–0.036	0.106
	(0.019)	(0.022)	(0.023)	(0.090)
Regional dummies	Yes	Yes	Yes	Yes
Observations	71	70	71	351
R-squared	0.164	0.117	0.278	0.026

Note: *, **, and *** indicate coefficient significance at 10%, 5%, and 1%, respectively.

in the second subperiod after 1990. During the 1990s, many countries began to remove restrictions on cross-border financial transactions.

This financial account liberalization was particularly accelerated among developed countries but not among developing countries (Figure 4). In developing countries, financial openness seems to have been stagnant except for a short period of increase during the early 1990s. On average, developing remain much less open to international financial transactions relative to developed countries. This situation partly explains why the importance of the global factor in developing countries has not increased in the second subperiod (Figure 2). Business cycles in developing countries are not synchronized with the world business cycle because they are not financially integrated with the world during the period when financial integration is an important driving factor in world business cycles. Other than openness measures, higher initial GDP appears to be positively related to the global factor share. The real effective exchange rate volatility does not seem to be significant.

In Column 4 of Table 3, a pooled OLS regression was run using the variance shares explained by the global factor for non-overlapping ten-year periods as the dependent variable. The independent variables are the mean values corresponding to each decade. In this pooled regression, financial openness appears to be significantly positively associated with the importance of the global factor in GDP fluctuations. Other variables do not seem significant.

Panel B of Table 3 reports the results for the regressions of the GDP variance shares explained by country factors. The coefficients for trade and financial openness are estimated to be negative, an outcome which suggests that openness reduces the role that country-specific shocks play in business cycle fluctuations. Trade openness tends to be significantly negatively associated with the importance of country factors in the first subperiod, and financial openness appears significant in the second subperiod.

The regression results suggest that countries more open to international trade and financial flows tend to be more connected with the global business cycle, whereas countries less exposed to international linkages are more likely to have their own country cycles. Financial openness, rather than trade openness, is particularly likely to contribute to global business cycle synchronization in the post-1990 globalization period.

IV. Conclusion

The international comovement of business cycles has long attracted academic interest. In this study, we estimate an unobserved global factor that affects the macroeconomic series in all countries, an unobserved country factor that only affects variables within a given country, and an idiosyncratic component specific to each series by applying the multi-level factor model of Choi *et al.* (2018) to the real macroeconomic variables of 71 countries from 1970 to 2018. We investigate the importance of global and country factors in driving macroeconomic fluctuations in developed versus developing countries and explore how their relative importance has evolved as globalization in trade and financial flows advanced over time. We also examine the relationship between the importance of global and country factors in the macroeconomic fluctuations and the degrees of trade and financial openness by a regression analysis.

We find that the global factor closely comoves with the business cycles of developed countries and explains a much larger share of macroeconomic fluctuations in developed countries than it does in developing countries. Dividing the sample into subperiods reveals that developed countries' macroeconomic fluctuations have become more synchronized to what is called the "world business cycles" proxied by the global factor, as globalization in trade and financial flows has intensified. By contrast, developing countries' business cycles can be largely characterized as "country cycles" shaped by country-specific factors. The regression results show that countries more open to international trade and financial flows tend to be more connected with the global business cycle, but countries less exposed to international linkages are more likely to have their own country cycles. Financial openness, rather than trade openness, tends to contribute to global business cycle synchronization in the post-1990 globalization period.

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