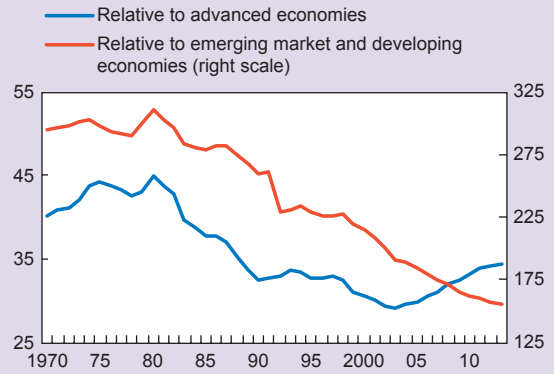
5. Long-Run Growth in Latin America and the Caribbean: The Role of Economic Diversification and Complexity

Economic diversification and complexity—relating to the range of products that a country produces and how sophisticated these products are—matter for long-term growth. Unfortunately, Latin America and the Caribbean (LAC) have not been able to benefit significantly from these levers so far. Economic diversification and complexity remain relatively low, and the dynamics over the last decade have not been encouraging. We also find that the benefits of diversification and complexity can be undermined by shortcomings in other areas (for example, macroeconomic instability), consistent with historical experiences in the region. Looking ahead, the key to improving longer-term growth prospects is to prioritize structural reforms and harness knowledge spillovers from greater openness, while preserving sound macroeconomic frameworks.

Growth has slowed markedly in LAC, and prospects for medium-term growth have been marked down (see Chapter 2). One often-cited argument for the region's subdued outlook is its relatively narrow economic base and strong dependence on commodity exports, especially now that global commodity markets appear to be in a secular downturn (see Chapter 3). Meanwhile, progress in branching into the production and export of goods intensive in skill and technology ("complex" goods) and high value added sectors has been modest throughout the region, especially when compared with the newly industrialized economies of Asia. Limited economic diversification and complexity, in turn, have also been linked, more generally, to the region's long-standing difficulty in improving its comparative growth performance with respect to both advanced and emerging market economies (Figure 5.1). But is the region really less diversified or complex than others? How big a handicap is this? And what can be done about it?

Figure 5.1
Latin America and the Caribbean: Relative GDP per Capita
(Percent)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Ratio of nominal GDP (purchasing power parity dollars) per capita for Latin America and the Caribbean versus advanced economies and emerging market and developing economies.

How (Un)Diversified Are LAC Economies?

To address these questions, this chapter considers two concepts of economic diversification with respect to merchandise exports.[1] The first one is a simple export diversification index (DIV) that captures the extent to which a country's exports are concentrated in particular goods (see IMF 2014a, 2014b). The second concept, economic "complexity," was proposed by Hidalgo and Hausmann (2009) and incorporates not only the breadth of a country's exports, but also how knowledge intensive they are. Conceptually, diversification refers to the concentration of exports across goods, whereas complexity complements that information with how sophisticated these goods are.

Note: Prepared by Fabiano Rodrigues Bastos and Ke Wang, with excellent research assistance from Genevieve Lindow. See Rodrigues Bastos and Wang (forthcoming).

[1] The availability of detailed, consistently defined, and long historical time series on goods trade facilitates comparisons of productive structures across countries over an extended period of time, a key goal of this chapter. Unfortunately, similar information is not available for service exports or nontradables.

We use two specific metrics derived from this approach, namely an economic complexity index (ECI) and a complexity outlook index. Box 5.1 provides a brief description of both metrics, and highlights conceptual differences vis-à-vis the export diversification index in further detail.

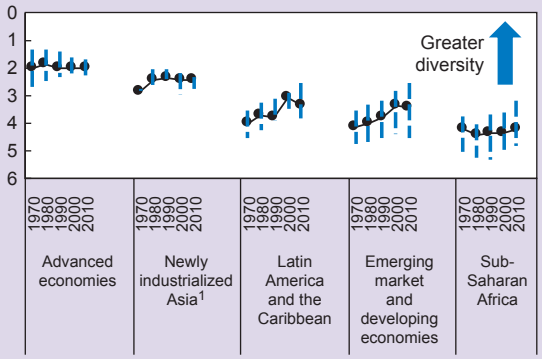
Figure 5.2 shows that the level of export diversification in LAC is significantly lower than in advanced economies and the newly industrialized Asian countries (which can be thought of as a reference point for successful economic convergence), but similar to what is observed among other emerging market and developing economies.[2] Relative to 1970, LAC appears to have diversified its export bundle, though this trend has been halted and even partly reversed since 2000.[3]

In terms of the ranking across regions, the ECI paints a very similar picture (Figure 5.2).[4] LAC economies stand out as being far less complex than advanced economies, but are on par or slightly better than other developing and emerging markets. However, actual economic complexity (ECI) in LAC has been stagnant or trending down since 1970, even though potential complexity (complexity outlook index) has followed a more benign trajectory. Together, these trends point to a growing untapped potential for economic progress.

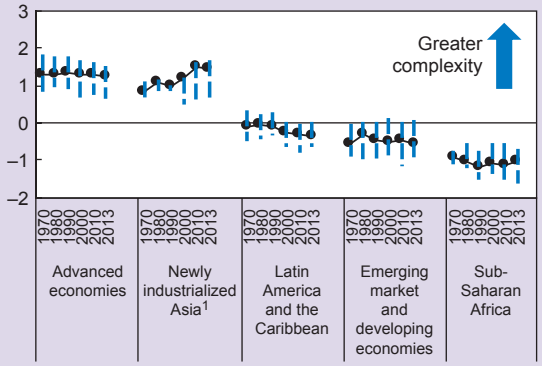
This is consistent with the region's modest success in branching out into more sophisticated goods markets. Similar arguments have recently been raised by De La Torre, Didier, and Pinat (2014), who note the region's failure to harness learning spillovers associated with trade, and Blyde (2014), who discusses LAC's limited participation in global supply chains, particularly compared to Asia.

Figure 5.2
Export Diversification and Economic Complexity

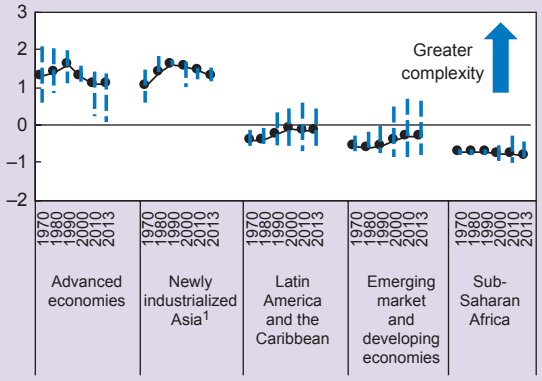
Export Diversification Index Across Groups of Countries
(Index, reverse order)



Economic Complexity Index Across Groups of Countries
(Index)



Economic Complexity Outlook Across Groups of Countries
(Index)



Sources: Hausmann and others (2014); IMF (2014b) and World Economic Outlook database; and IMF staff calculations.
Note: Includes only countries with goods exports larger than US$1 billion in 2013. The dots denote the median and the dashed vertical lines the range between the 25th and 75th percentiles of five-year averages of each index.
[1] Includes Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.

[2] Higher values of DIV denote higher export concentration, and hence lower export diversification. The charts use a reverse scale for DIV to facilitate comparison with the complexity measures.

[3] The commodity boom of the past decade has contributed to an increasing export concentration measured in value terms, due to price effects.

[4] A z-score normalization procedure centers the indicator around 0 (see Hausmann and others 2014).

Do Diversification and Complexity Matter?

Export diversification and, even more so, economic complexity are closely correlated with the level of GDP per capita (Figure 5.3). The correlations are stronger for non–resource-rich countries, particularly non-oil exporters.[5] But do diversification and complexity contribute to prosperity, or merely reflect it? And are there any implications for prospective growth across LAC?

The relationship between diversification and economic growth has been investigated in a number of studies. Mejia (2011) provides an extensive survey on the topic. A leading argument casts diversification as a way to stabilize export earnings, particularly relevant for countries vulnerable to terms-of-trade shocks (portfolio effect). Export diversification is also portrayed as the result of structural transformation, possibly reflecting the modernization of productive structures and the widening of comparative advantages.

One potential mechanism linking higher complexity to stronger growth, in addition to the ones mentioned previously, is knowledge spillovers to productivity and investment. To achieve greater product variety and sophistication, economies need to get better at acquiring and combining specialized knowledge and inputs. This expands the set of production possibilities in higher value added activities, boosting investment and productivity.

In this chapter, we focus on one specific aspect of the debate. Similar to Hausmann and others (2014), we explore whether diversification and complexity help to *predict* long-term growth, by estimating the following panel regression:

$$g_{it} = \beta' X_{it-1} + \gamma' U_{it} + \epsilon_{it}, \qquad (5.1)$$

where subscripts i and t denote country and decade, respectively, and g denotes average annual growth in GDP per capita over the decade (the panel covers the decades between 1970 and 2010) for each country. X contains predetermined values of the diversification and/or complexity indicators, measured as initial conditions for the subsequent decade. U contains the constant, fixed effects, and several control variables. The control variables include several predetermined variables relevant for long-term per capita growth (life expectancy, human capital, share of agriculture in total value added, and political regime) and some contemporaneous, decade-averaged variables that can plausibly be treated as exogenous (for example, terms of trade and degree of commodity dependence). ϵ denotes the error term.[6]

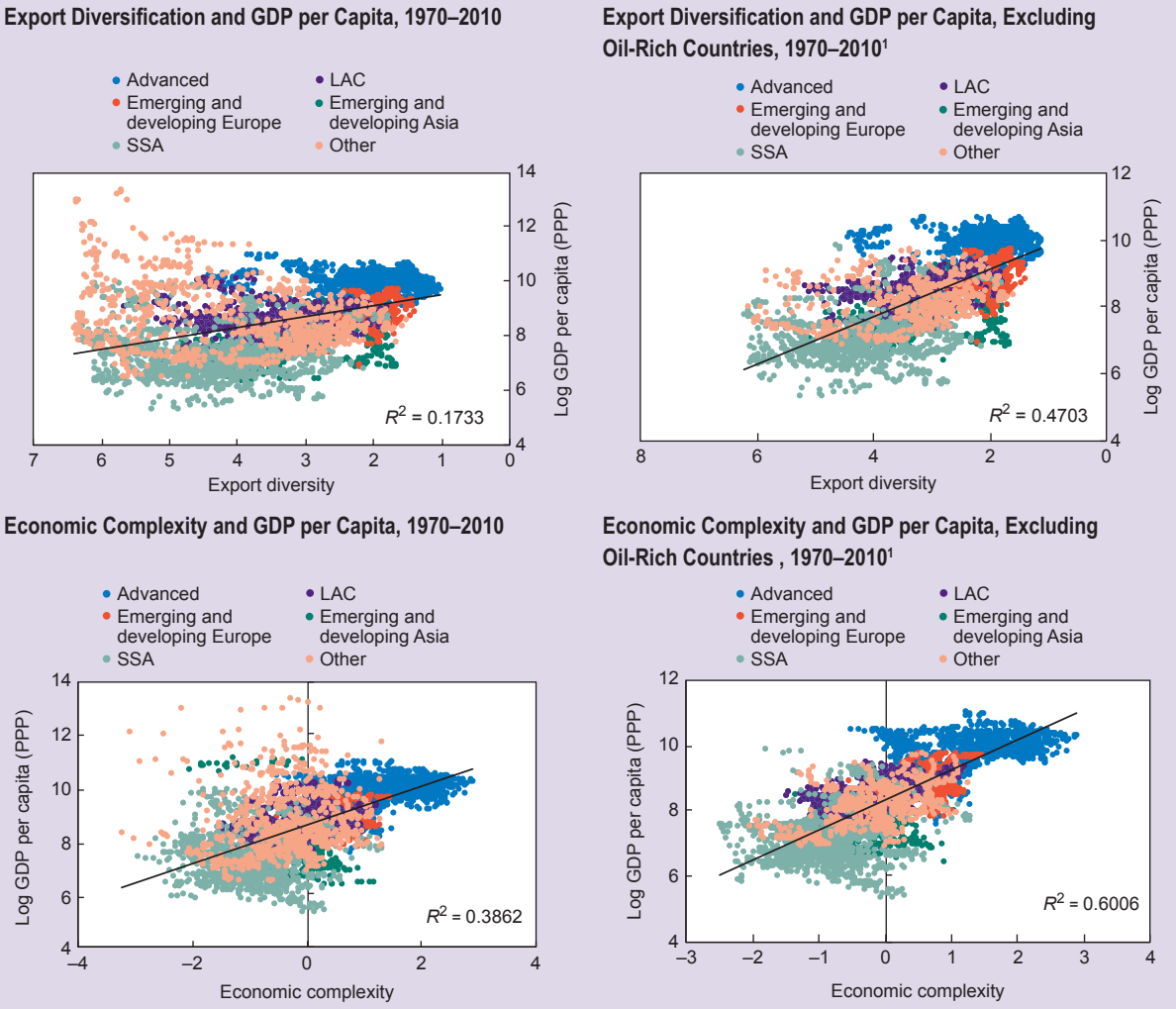
We add to the analysis in Hausmann and others (2014) by considering specifications that include complexity and, simultaneously, multiple dimensions of relevant initial conditions for long-term growth such as demographic variables, human capital, capital intensity, sectoral composition, openness, political regime, and social development. We also control for macroeconomic instability, LAC-specific complexity slopes, and unobserved region-specific heterogeneity. This rich set of control variables allows for a more

[5] Natural endowments are an important determinant of national income whose effects operate through specific channels such as the quality of resource management, ability to mitigate the resource curse, and history of terms-of-trade shocks.

[6] Relating period-average growth only to predetermined and plausibly exogenous variables, the specification minimizes simultaneity risks. Nonetheless, *R*-squared statistics remain fairly high. The regressions incorporate time fixed effects and standard errors that are robust to clustering at the country level. Results are largely unchanged when allowing for LAC-specific slope coefficients on diversity/complexity. Results continue to hold when adding region-specific fixed effects and under some specifications for country fixed effects. However, the panel has a small time dimension (four decades at most), so scope for focusing on variation within the same country is limited, and country-level fixed effects are likely to purge much of the heterogeneity linked to different levels of diversity/complexity that the estimation is focused on. Thus, our preferred specification is to include region and time fixed effects along with an extended set of controls to contain risks of omitted variable bias while also exploiting data variation between countries.

Figure 5.3

Export Diversification, Economic Complexity, and GDP per Capita



Sources: Hausmann and others (2014); IMF (2014b); IMF, World Economic Outlook database; Penn World Tables 8.0; and IMF staff calculations.
Note: LAC = Latin America and the Caribbean; PPP = purchasing power parity; SSA = sub-Saharan Africa. Sample includes 137 countries where total exports in 2013 are at least US$1 billion.
[1] Only includes countries where oil exports are less than 10 percent of GDP.

robust assessment of whether (and by how much) diversification and complexity matter for growth, which we then use to shed light on the current situation in LAC.

Using a sample of 103 countries for 1970–2010, we confirm that initial levels of diversification and complexity robustly predict long-term average growth of real GDP per capita, consistent with Hausmann and others (2014) (Table A5.1).[7] In essence, more complex and diversified economies tend to have higher GDP per capita growth on average over the following decade, holding everything else fixed.

[7] Other empirical studies also show a positive impact of export diversification on growth (see Agosin 2007; Al-Marhubi 2000; Lederman and Maloney 2003).

Variation in complexity levels across LAC countries can account for a full percentage point difference between annual per capita growth rates, as discussed in the next section. Although most of the regressors are predetermined, the equation explains 50–55 percent of the total variation in growth outcomes. In general, the complexity measures (ECI and complexity outlook index) are more powerful predictors of long-term growth than simple export diversification (DIV), pointing to the additional predictive content of controlling for the knowledge intensity of goods.

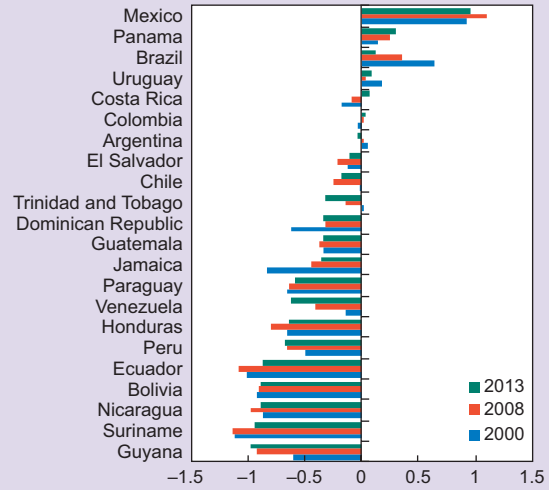
To shed further light on the link between complexity and economic development, we also include a distance measure that captures how much a country's GDP per capita deviates from the level predicted by complexity (Table A5.1, column VIII).[8] The results suggest that countries tend to experience lower growth subsequently if their initial level of income is "too high" for their complexity level. This finding aligns well with new evidence for growth reversion to the mean presented by Pritchett and Summers (2014).

Implications for Growth Prospects in LAC

Several countries in LAC have experienced a decline in diversification and complexity over recent years, including large or fast-growing economies such as Brazil, Mexico, Chile, and Peru (Figure 5.4). This reinforces concerns about the region's long-term growth outlook.

Based on the econometric results of the previous section, we can quantify the contribution to long-term growth forecasts attributable to diversification and complexity. To this end, we use our estimates of equation (5.1) and compute a conditional growth forecast for the period 2011–21, using the latest values of the (predetermined) explanatory variables.[9] Heterogeneity across LAC can be summarized by comparing each country's predicted growth rate given its actual current complexity score with a hypothetical growth rate based on the average LAC value of complexity.

Figure 5.4
Economic Complexity Index
(Index, five-year rolling average)



Sources: Hausmann and others (2014); IMF, World Economic Outlook database; and IMF staff calculations.

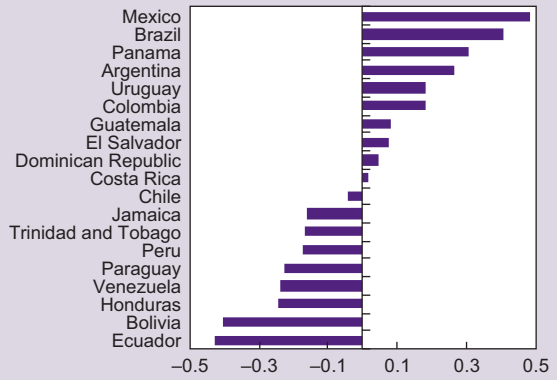
The results show sizable differences across countries (Figure 5.5).[10] Mexico, the LAC country with the highest economic complexity score in our sample, is forecast by the model to experience GDP per capita growth almost 0.5 percentage point faster on average per year over the next decade than if it matched the LAC average for complexity. At the other end of the spectrum, Ecuador would grow faster by approximately 0.4 percentage point if its complexity score was at the LAC average.

[8] Calculated as the residuals (relative to fitted values) from a regression relating GDP levels to diversification/complexity and a measure of commodity dependence (see Rodrigues Bastos and Wang, forthcoming).

[9] This is an out-of-sample forecast but uses known values for predetermined variables. Because we focus on the net impact of different values of predetermined variables, the values of contemporaneous decade-averaged variables do not matter.

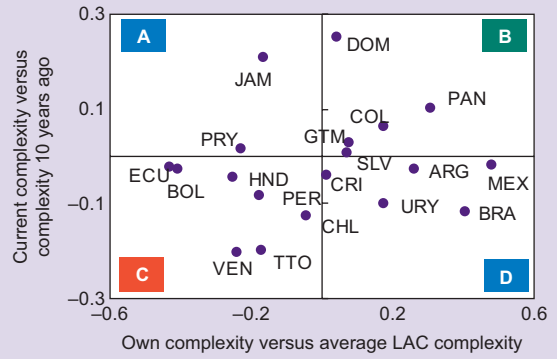
[10] Based on average projections from estimated models (I), (III), and (V) shown in Table A5.1.

Figure 5.5
Net Impact on Predicted GDP per Capita Growth Rates: Own Complexity Versus LAC Average Complexity
(Percentage points, annual averages)



Source: Rodrigues Bastos and Wang (forthcoming).
Note: LAC = Latin America and the Caribbean.

Figure 5.6
Net Impact of Complexity Variables on Predicted GDP per Capita Growth Rates
(Percentage points, annual averages)



Source: Rodrigues Bastos and Wang (forthcoming).
Note: LAC = Latin America and the Caribbean. A: less complex than LAC average, increasing complexity; B: more complex than LAC average, increasing complexity; C: less complex than LAC average, declining complexity; D: more complex than LAC average, declining complexity.
For country name abbreviations, see page 79.

We also examine how much faster or slower GDP per capita would be forecast to grow if the country-specific complexity scores were replaced with their own values of 10 years earlier (Figure 5.6, vertical axis). The results show that the recent evolution of complexity represents a drag for predicted per capita growth in most of the LAC countries, reaching 0.2 percentage point in the cases of Trinidad and Tobago and Venezuela. On the other hand, some countries have benefited from favorable complexity dynamics over the last decade, notably the Dominican Republic, Jamaica, and Panama.

The econometric results also highlight the importance of other predetermined variables. For instance, higher initial dependency ratios are unequivocally associated with lower trend per capita growth.[11] Although the near-term demographic outlook remains favorable for LAC, some countries are expected to face significant increases in dependency ratios over the next decades. Our estimates imply, for instance, that annual per capita growth in Brazil and Chile would slow by 0.2 percentage point and 0.5 percentage point, respectively, because of the projected dynamics of their dependency ratios between 2020 and 2030.[12] In addition, the results confirm the importance of sound macroeconomic policy frameworks—each year of macroeconomic instability (defined as annual inflation above 30 percent) can reduce GDP per capita growth by a cumulative 2 percentage points over the course of a decade.

How Can Policies Promote Complexity and Diversification?

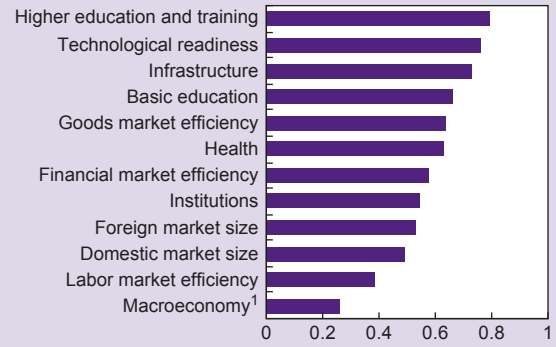
Recent studies support the view that infrastructure, education, and market openness are key to inducing greater sophistication in exports and production. Given the structural shortcomings in LAC, steady progress in these areas should be a priority.

Daude, Nagengast, and Perea (2014) explore a number of factors that could, a priori, have a positive effect on economic complexity, and identify energy availability, tertiary education, and foreign

[11] Some of the channels discussed in the literature are labor supply, saving, and fiscal costs associated with aging (see Bloom, Canning, and Fink 2011).

[12] Demographic projections are taken from the *2012 World Population Prospects* (United Nations).

Figure 5.7
Correlation between GCI Components and ECI, 2006–13
(Correlation coefficient)



Sources: Hausmann and others (2014); World Economic Forum (2014); and IMF staff calculations.
Note: ECI = economic complexity index; GCI = Global Competitiveness Indicator.
[1] Macroeconomy refers to government budget balance, national savings, inflation, public debt, and country credit rating.

direct investment inflows as the most important variables.[13] Studies on global value chains point out that increased participation in complex production networks requires supportive transportation and logistics infrastructure as well as modern information and communication technologies systems (see Blyde 2014). These findings are consistent with simple correlations between economic complexity, on the one hand, and the components of the World Economic Forum's Global Competitiveness Indicator (GCI), on the other (Figure 5.7).[14]

Similar to the role of foreign direct investment flows, trade openness has long been highlighted as a source of knowledge spillovers for developing economies that could contribute to economic diversification. Since the work of Melitz (2003), studies have also emphasized the role of greater trade exposure in pushing resources toward more productive firms, even within narrowly defined industries, improving overall allocative efficiency in the economy.

A more controversial route is associated with activist development policies. At present, there is a lack of compelling evidence in favor of scaling up these types of policies in the region.

Hausmann and others (2014) highlight that there is no simple mapping between policies and increasing complexity. Thus, they advise policymakers to pursue context-specific solutions, building upon the country's existing productive capabilities to promote diversity and complexity. This view does not pin down specific courses of action, but has helped to revive interest in activist development policies, including at the sectoral level. In this context, the Inter-American Development Bank (2014) recently put forth a framework for a new generation of development strategies and principles to guide sensible policy intervention.[15]

However, a cautious approach appears warranted. There is still limited systematic understanding about the costs and risks associated with activist policies. Successful individual examples of "industrial policies" also need to be tallied against the numerous apparent failures—especially from within LAC's own economic history—and put into the relevant context. For instance, although the successful historical experiences of Korea, Singapore, and Taiwan Province of China did feature some activist policies, these were incorporated into a broader strategy of boosting

[13] The April 2015 *Regional Economic Outlook: Asia and the Pacific* uses a similar methodology to Daude, Nagengast, and Perea (2014), identifying trade openness and institutional quality as important positive correlates of complexity. In addition, geographic distance to markets and size of government are found to be negatively correlated with complexity.

[14] The ordering of correlation coefficients (Figure 5.7) remains broadly unchanged if one controls for the common effect of GDP per capita level on the ECI and GCI components. According to the correlations, solid macroeconomic policies do not appear sufficient for raising complexity, while the regressions results indicate that macroeconomic instability hurts long-term growth.

[15] The Inter-American Development Bank (2014) stresses the importance of a disciplined approach that requires clarity about (1) what is the underlying market failure being addressed, (2) how the proposed solution addresses the specific failure at hand, and (3) whether institutions are capable of implementing the solutions as intended.

international competitiveness. In addition, they were supported by effective structural policies targeting human capital and domestic saving (see United Nations Conference on Trade and Development 2003; World Bank 2008).

Finally, increases in complexity are not, by themselves, sufficient to deliver strong growth, as illustrated by the historical examples of Brazil and Mexico. Indeed, the potential benefits of greater complexity may well be offset by countervailing factors, such as macroeconomic instability. At the same time, political capture and rent-seeking highlight the pitfalls associated with activist development policies and the quality of governance structures that they require to have a chance of success.[16]

Complexity, from a positive perspective, offers a valuable tool for characterizing comparative advantages of a country which, in turn, can inform the design of high-impact policies.

Using the complexity concept, Hausmann and others (2014) build a map that indicates how similar goods are to each other in terms of their required productive knowledge.[17] For each country, it is then possible to populate this map using detailed export data, unveiling the country's comparative advantage in terms of knowledge at a product level.

This exercise shows, for instance, that Brazil and Mexico have scope for more immediate knowledge upgrading across a wide range of products. Other countries are more restricted to selected areas (for example, products related to textiles or food processing). There are also countries where knowledge upgrading is harder to achieve given the existing productive capabilities (typically, oil economies).

This information can be useful for policymakers. It may help to inform the most appropriate priorities for reforms in areas such as education and market openness for a country, or inform trade and investment negotiations with other countries. It can reveal areas where deployment of public resources is particularly unlikely to spur complexity given a weak knowledge base. Finally, it can filter the cases where externalities are particularly costly for a country given its comparative advantages (for example, research and development in selected agricultural products, standards and certification in the food-processing industry), possibly facilitating and guiding the design of policies.[18]

Policy Conclusions

Complexity matters for growth but, by itself, is not sufficient. Initial conditions in terms of diversification and complexity are robustly associated with stronger long-term growth. Although the potential benefits of increasing complexity can be sizable, they can easily be offset by shortcomings in other areas. In particular, the projected demographic transition in some LAC countries over the next decades or renewed bouts of macroeconomic instability could meaningfully reduce long-term growth. Regarding the latter, LAC's low domestic saving rates stand out as a perennial factor underlying the region's vulnerability to external shocks, associated with strong swings in real exchange rates and risk of disruptive adjustments.

Steady progress on structural reforms remains a priority and is indispensable for sustainably improving complexity in LAC; a renewed push for activist development policies should be met with caution. The fact that LAC continues to clearly lag behind in many crucial policy areas closely associated with economic complexity (infrastructure, education, market openness) underscores the continued need to address structural deficiencies. Meanwhile, scaling up activist policies remains fraught with risks, as more work is needed to establish their overall costs and benefits.

[16] In addition, increases in complexity that fundamentally depend on market protection—like historical import substitution strategies in LAC—would naturally be more prone to complexity reversals.

[17] This is called the "product space" which can be found at http://atlas.cid.harvard.edu/.

[18] For instance, Rodrik (2004) highlights the role of strategic collaboration between the private sector and the government to unveil the most critical obstacles and identify effective policy solutions.

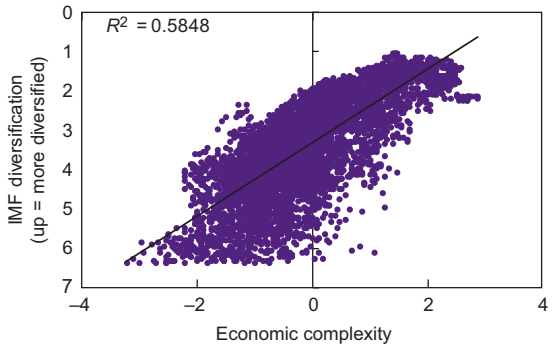
Countries need to evaluate thoroughly their comparative advantages and the implied potential for knowledge upgrading, to pursue effective reforms and policies. Recent trends in international production processes heighten diversification challenges in LAC, particularly for South American economies which are less integrated with U.S. markets and their supply chains. In this context, it has become crucial for countries to deepen the understanding of their own comparative advantages, and realistically assess chances for knowledge upgrading. Complexity offers a useful granular perspective on this question and can help to inform policy making if considered along with other traditional dimensions (such as spatial proximity to major markets, relative production costs, or trade agreements).

Box 5.1

Defining and Measuring Economic Complexity

Hidalgo and Hausmann (2009) and Hausmann and others (2014) apply the concept of complexity to study economic development across countries. The economic complexity of a country reflects not only the availability of productive knowledge, but also the quality of underlying networks and interactions needed to successfully combine different bits of specialized information. Because the latter is nonobservable, the authors propose an indirect way to infer complexity using international trade data.

Figure 5.1.1
Complexity and Diversification, 1970–2010

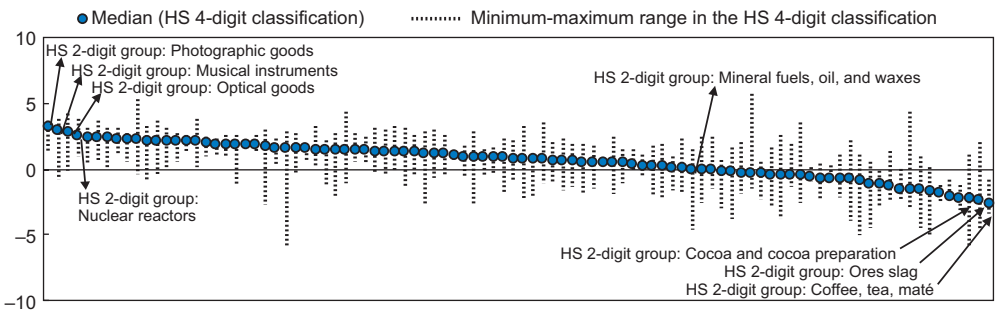


Sources: Hausmann and others (2014); and IMF staff calculations.
Note: Sample includes 137 countries where 2013 total exports is at least US$1 billion.

The economic complexity index is based on two key dimensions: *diversity* and *ubiquity*. The first dimension is conceptually similar to the export diversification index, but defined as the number of products in which a country has revealed comparative advantage (the country-specific export share of a product is larger than the export share of the same product in world trade) rather than in terms of export value concentration. This implies that the complexity measure is relatively less affected by price effects in commodity price booms, a desirable feature. Ubiquity is defined as the number of countries that export a particular product with a revealed comparative advantage. Another complexity measure used in this chapter is the complexity outlook index, which captures the country's proximity to complex goods based on its current productive capabilities; the complexity outlook index measures the distance to products that the country *is not* currently exporting, using the level of complexity of these products as weights.

The general idea is that countries exporting a large range of products (diversified), which in turn are exported by relatively few countries (low ubiquity), are more complex. The authors combine diversity and ubiquity iteratively to refine the overall measure of country complexity through a network algorithm; similarly, a corresponding measure of *product* complexity can be defined. The ubiquity dimension introduces an important conceptual difference from the pure export diversification concept. It sets a higher bar as it captures the country's ability to export goods that require coordination of high volumes of knowledge. The economic complexity index is ultimately determined by the complexity of the products that the country exports, and as shown below, product complexity is not dictated by the sector to which the good belongs. The complexity outlook index, in turn, indicates which countries are the best placed to increase their complexity, all else equal, because their current economic structures favor diversification into more, and more complex, new goods.

Figure 5.1.2
Product Complexity Scores
(Index)



Sources: Hausmann and others (2014); and IMF staff calculations.
Note: HS = Harmonized System codes.

Annex 5.1. Regression Results

Table A5.1. Determinants of GDP per Capita Growth Rates, Annual Averages

(Decades 1970–80, 1980–90, 1990–2000, 2000–10)

Variables	(I) ECI	(II) ECI-LAC Slope	(III) COI	(IV) COI-LAC Slope	(V) ECI-COI	(VI) ECI-COI-DIV	(VII) DIV	(VIII) Distance COI-implied
Initial GDP PC	–2.34***	–2.37***	–2.33***	–2.35***	–2.36***	–2.41***	–2.19***	–1.72***
	(0.45)	(0.47)	(0.44)	(0.44)	(0.45)	(0.47)	(0.42)	(0.41)
Initial complexity (ECI)	1.38**	1.22*			1.06	1.40*		
	(0.66)	(0.69)			(0.64)	(0.80)		
LAC-specific ECI slope		0.96						
		(1.58)						
Initial complexity (COI)			1.68**	1.35*	1.22*	1.54**		
			(0.84)	(0.78)	(0.62)	(0.76)		
LAC-specific COI slope				2.28				
				(1.92)				
Initial export diversification (DIV)						0.90	–1.31**	
						(0.90)	(0.66)	
Initial COI-based distance								–2.30*
								(1.24)
Initial human capital	1.15	1.20	1.03	1.17	1.12	1.15	0.86	0.93
	(0.92)	(0.93)	(0.91)	(0.93)	(0.91)	(0.91)	(0.87)	(0.87)
Initial capital intensity	–0.33	–0.30	–0.35	–0.34	–0.31	–0.30	–0.37	–0.49**
	(0.25)	(0.27)	(0.24)	(0.25)	(0.25)	(0.26)	(0.24)	(0.21)
Initial dependency ratio	–0.06***	–0.06***	–0.06***	–0.06***	–0.06***	–0.06***	–0.07***	–0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Initial openness	0.04	0.04	0.06	0.12	0.04	–0.02	0.14	–0.02
	(0.29)	(0.29)	(0.28)	(0.27)	(0.29)	(0.30)	(0.31)	(0.30)
Initial life expectancy	0.07*	0.07*	0.07*	0.07*	0.07*	0.07*	0.13***	0.13***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)
Initial agriculture share	–0.03*	–0.03*	–0.03*	–0.03*	–0.03*	–0.04**	–0.02	–0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Initial political regime	0.00	0.00	0.00	0.00	–0.01	–0.01	0.01	0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Energy exports to GDP	0.08 ***	0.08***	0.08***	0.08***	0.09***	0.08***	0.08***	0.05***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Metals exports to GDP	–0.02	–0.02	–0.02	–0.01	–0.01	–0.02	0.00	0.01
	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Other commodity exports to GDP	0.05	0.05	0.04	0.04	0.05	0.05	0.01	0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Terms-of-trade growth	0.08**	0.08**	0.08**	0.08**	0.08**	0.08**	0.08**	0.08**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
Macroeconomic instability	–2.34 ***	–2.38***	–2.35***	–2.37***	–2.33***	–2.37***	–2.52***	–2.70***
	(0.58)	(0.59)	(0.57)	(0.57)	(0.58)	(0.59)	(0.62)	(0.60)
Observations	333	333	333	333	333	332	334	324
R^2	0.52	0.52	0.51	0.52	0.52	0.52	0.48	0.51

Source: IMF staff calculations.

Note: All regressions include time fixed effects and country-clustered standard errors. Regressions 1 to 6 include region-specific effects. Higher values of economic complexity variables (ECI and COI) denote higher complexity. Higher value of the export diversification variable (DIV) denotes less diversification. Higher value of the COI-based distance denotes countries with GDP per capita levels higher than its COI-implied level. See Rodrigues Bastos and Wang (forthcoming) for detailed discussion. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.