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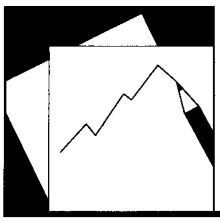

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Benchmarking Structural Transformation Across the World

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Benchmarking Structural Transformation Across the World

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Abstract

This paper documents stylized facts on the process of structural transformation around the world and empirically analyzes its determinants using data on real value added by sector of economic activity (agriculture, manufacturing and services) for a panel of 168 countries over the period 1970-2010. The analysis points to large differences in sector shares both across and within regions as well as for countries at similar levels of economic development. Using both linear and quantile regression methods, it finds that a large proportion of the cross-country variation in sector shares can be accounted for by country characteristics, such as real GDP per capita, demographic structure, and population size. It also finds that policy and insitutional variables, such as product market reforms, openness to trade, human and physical capital, and finance improve the baseline model's ability to account for the variation in sectoral shares across countries.

JEL Classification Numbers: O14, O24, O40

Keywords: Structural Transformation, Agriculture, Manufacturing, Services, Quantile Regression, Panel Data

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I. INTRODUCTION

Structural transformation—the reallocation of economic activity from low productivity to high productivity activities and sectors —lies at the core of economic development. Since the pioneering work of Chenery, Kuznets, and Lewis, a burgeoning literature has examined the canonical shifts of output and labor first from agriculture to manufacturing, followed by manufacturing to services at later stages of development. This pattern is consistent with the experience of advanced economies (AEs) that have experienced secular declines in manufacturing employment and sectoral value added since the 1970s. In many emerging market economies (EMEs) and low-income countries (LICs), however, accelerating economic transformation and catch up to higher income levels remains a policy imperative.

Despite structural transformation being a central feature of economic growth, its pace and pattern has varied markedly across countries. For instance, the recent high-growth episode in many LICs in sub-Saharan Africa has been accompanied by a declining share of agriculture and growth in the services share, while the manufacturing sector's share of output has remained broadly unchanged. Similarly, while the striking growth performance of East Asia was underpinned by dynamism in manufacturing, structural transformation in other EMEs has been uneven.

These differences in patterns across countries and regions raise important questions and policy challenges for countries. Has the evolution of sectoral output shares across countries been in line with their characteristics and relevant comparators? How do differences in policy, institutional, and reform environments influence observed patterns of structural transformation across countries? Answers to these questions are not only crucial for understanding the driving forces behind structural transformation, but can also provide a gauge of countries' future growth prospects.

A sizeable body of literature has attempted to account for the broad set of empirical regularities that characterize structural transformation, emphasizing shifts across sectors in output and employment both across countries and over time. This paper contributes to the literature in at least two major dimensions. First, it provides a statistical benchmarking analysis to evaluate the structure of economies. Deviations of actual sectoral shares in value added from predicted levels allow for a more systematic identification of gaps and can help focus attention on the impediments that underlie them. Second, notwithstanding renewed theoretical interest on this topic, the empirical evidence on the proximate determinants of structural transformation, particularly in developing countries, remains scant. Our paper adds to this literature by providing a comprehensive empirical analysis of the policy and institutional drivers of structural transformation across a wide cross-section of countries.

We document stylized facts on structural transformation and empirically characterize and benchmark the process across a broad sample of advanced and developing economies over the 1970-2010 period. Predicted values of real value added shares in agriculture, manufacturing, and services are obtained from cross-country OLS and quantile regressions that control for structural characteristics, such as GDP per capita, demographic structure, and

population, among others. This analysis allows us to assess whether or not the relative importance of a sector in a country is in line with what would be predicted based on fundamentals, as well as in relation to other countries with similar characteristics.

The paper confirms the large differences in sector shares across income groups and regions, but also points to large variation within regions and across countries at similar levels of economic development. Our empirical findings indicate that country fundamentals explain a significant proportion of the cross-sectional variation in the real value added shares of the agriculture and services sectors, and somewhat less so in manufacturing. Second, we find that natural resource dominance is associated with lower structural change. Finally, we find that there are large and systematic differences in the gap between actual and predicted shares even within country groups and regions.

Sectoral shifts are not mechanical processes: their speed and extent reflect the willingness and ability of labor and capital to move toward higher-productivity sectors, all of which are strongly influenced by the policy and institutional environment. We find that differences in the strength of product market reforms in agriculture and networks (electricity and communications), human capital, financial sector reforms, openness to trade and other indicators of globalization are important for explaining cross-country variations in sectoral shares. Liberalization of agriculture, in particular, can facilitate a re-allocation of resources into more productive sectors, while lower trade tariffs and a stronger quality of political institutions are associated with higher agricultural shares. We also find evidence of an impact of an undervalued exchange rate for countries with low manufacturing shares.

The relevance of these factors varies at different points along the sectoral share distribution and over time. Network reforms, a higher capital stock, credit, and FDI inflows are more pertinent for countries with low manufacturing shares, whereas agricultural reforms and tertiary education are more relevant for countries with high manufacturing shares. Likewise, product market reforms in agriculture and networks, tertiary education, and greater labor market flexibility tend to be more relevant for countries with high services shares.

This pattern is mirrored in how determinants of sectoral shares have evolved over time. In the pre-globalization period (pre-1992), network reforms were important determinants of services and agriculture shares. In the 1990s, their role, as well as the role of agricultural liberalization, in explaining manufacturing shares gains importance. Likewise, FDI was a more important driver of agriculture and manufacturing shares in the pre-globalization period, but is correlated with a higher services share during the globalization period. It is in this period also that openness to international trade becomes more strongly associated with a higher manufacturing share.

The remainder of the paper proceeds as follows. The next section presents a brief review of the literature on structural transformation, while Section III establishes and reviews stylized facts. Section IV presents the results of the empirical benchmarking exercise and results of the regressions on the policy and institutional drivers of diversification. Section VI presents a battery of robustness checks, while Section VII concludes.

II. LITERATURE REVIEW

This section presents a brief overview of the recent literature on structural transformation, which motivates our analysis. Theoretical studies emphasize two broad economic mechanisms which drive the observed reallocation of economic activity across sectors. One class of multi-sector general equilibrium models focus on preferences or "demand" factors, with income effects driving the process of structural transformation (Echevarria, 1997, 2000; Bopport, 2011; Kongsamut et al., 2001). A second group of models emphasize relative price effects or "supply factors" to explain the long-run patterns in the sectoral reallocation of resources. Relative price changes and sectoral shifts are generated by having differential rates of productivity growth (Ngai and Pissarides, 2007; Duarte and Restuccia, 2010) or differential capital intensity across sectors (Acemoglu and Guerrieri, 2008).

Several recent theoretical studies combine elements of the two mechanisms to explain structural transformation. For instance, Buera and Kaboski (2012a,b) develop models which emphasize the role of increasing human capital or skill-intensity in services, and scale technologies as a complementary mechanism, to explain industry and services growth patterns over the development process. Openness to trade and the associated differential productivity growth rates across sectors has also been shown to have important implications for structural transformation (Matsuyama, 2009; Uy et al., 2012). Lee and Wolpin (2006) develop a two-sector model which measures the costs associated with sectoral labor reallocation and assesses the relative importance of labor demand changes (e.g., arising from sectoral productivity and relative price shifts) and labor supply factors (e.g., changes in demographics, fertility, and educational attainment) for structural transformation.

In terms of the empirical literature, while there is general recognition of the negative association between output per capita and the agricultural sector's share across countries, evidence on other proximate determinants of these shifts remains scarce. Our paper is related to a number of literatures. One strand of literature in international trade has examined the cross-country relationship between production and factor endowments, such as land and capital (Schott, 2003; Bernstein and Weinstein, 2002). Factor endowments are found to have a statistically significant and quantitatively important effect on levels of aggregate output. However, the analysis abstracts from issues of sectoral production shifts and transformation.

Another strand of the literature to which to our paper is related analyzes the determinants of sectoral productivity levels across countries. For example, McMillan and Rodrik (2011) document the shift of workers from sectors with below-average productivity into sectors with above-average productivity for a few Asian countries, but find the opposite pattern for countries in Latin America and sub-Saharan Africa, a phenomenon they label "productivity-reducing structural change". They provide exploratory regressions to show that a lower share of natural resources in exports, undervalued real exchange rates, and labor market flexibility contribute to growth-enhancing structural change. Duarte and Restuccia (2010) provide preliminary evidence which shows that trade openness is strongly correlated with industry productivity but less so with services productivity, while measures of the regulatory

environment are strongly correlated with productivity in services. Our paper provides a more in-depth empirical analysis of the policy drivers facilitating structural transformation.

Our paper is more closely related to cross-country empirical studies that examine the determinants of sectoral shares in value added. Nickell et al. (2008) examine the role of changes in relative prices, technology, and factor endowments (capital, arable land) in driving changes in the production structure of OECD countries. They find that the more rapid decline in manufacturing's share of GDP in the United Kingdom and United States as compared to Germany and Japan is largely explained by patterns of total factor productivity (TFP) and changes in the relative price of manufacturing and non-manufacturing goods. Further, they find and that low educational attainment among males is associated with a higher share of agriculture in output.

Our paper is closest in spirit to Kochhar et al. (2006) and Jaumotte and Spatafora (2007) who examine the relative importance of agriculture, industry, and services in India and Asian economies, respectively, compared to what fundamentals, such as income, population, and the size of the economy, would predict. In contrast to these papers, we examine structural transformation across a larger sample of countries, and account for the determinants of sectoral shares using a broader set of fundamental as well as policy and institutional drivers.

III. STYLIZED FACTS

This section presents some stylized facts about the process of structural transformation across levels of economic development, regions, and countries. We first document the evolution of the shares of real value added across agriculture, manufacturing, and services for a large cross-section of countries.[2] In particular, we examine the relationship between real value added shares by sector using data from the UN Statistics Division and the level of income (measured as the log of GDP per capita in constant PPP U.S. dollars) from 1970-2010 for a sample of 168 countries (see Appendix 1 for list of countries).

Similar to Bah (2011), Figure 1 plots value added shares for the agricultural, manufacturing, and services sectors as well as the corresponding fitted values from a panel regression that includes country fixed effects, and the level and square of GDP per capita (in logs).[3] Each

[2] By focusing on manufacturing, we only examine a subset of the share of value added in the industrial sector. Mining, construction and utilities are not considered. Services include wholesale and retail trade; hotels and restaurants; transport; telecommunications; financial and insurance services; other business services; and community, social, and personal services.

[3] Compared with Bah (2011), this paper uses a larger sample of countries and a more recent time period. Bah uses a sample of 9 developed and 38 developing countries for the period 1965-2000 for the developing country sample, and unequally-spaced intervals (20 year from 1870 to 1950 and 5 years between 1955 and 2000) for the period 1870-2000 for the developed country sample. Another difference is that this paper uses real value added as the dependent variable, whereas Bah uses nominal GDP shares.

graph also contains two red lines representing the confidence interval around the estimates.[4] The figure confirms the negative relationship between the agricultural output share and real GDP per capita, an inverted U-shaped curve relationship between the manufacturing output share and real GDP per capita, and the positive relationship between the services output share and real GDP per capita documented in other studies.

Consistent with the findings of Herrendorf et al., (2013), we find that the share of manufacturing value added peaks at a level of GDP per capita (in logs) of 8.5 (around US$ 5,000), while the fitted curve for services shows an acceleration of the services sector share when the log of real GDP per capita reaches a threshold value around the same level. We also find that services represent a high share of total value added even at low levels of GDP per capita.

Dividing the sample between AEs and EMEs and LICs, interesting differences in the relation between sectoral shares and real GDP per capita can be gleaned. In the case of the agricultural sector, the magnitude of the slope and the dispersion are significantly lower among AEs than among EMEs and LICs. In manufacturing, the slope of the fitted curve decreases monotonically with real GDP per capita for AEs since 1970, while it displays the canonical inverted U-shaped pattern among EMEs and LICs. In the case of services, the fitted curve for advanced economies appear to approximate a straight line, while in the case of EMEs and LICs the slope is fairly flat at very low level of real GDP per capita, and then increases significantly after real GDP per capita (in logs) reaches a level of 6.5 (around US$ 700).

We next turn to regional patterns of structural transformation. Weighted averages (by GDP per capita) are presented for five groups of countries: Latin America, Sub-Saharan Africa, Asia, Central and Eastern Europe, and Middle East and North Africa. As shown in Figure 2, at one end is sub-Saharan Africa, the region with the highest share of value added in agriculture, which remained roughly constant from the early 1980s until the mid 1990s, and has declined since then. In turn, the share of manufacturing has remained nearly constant over the whole period and by the 2000s, it was the region with the lowest share. Asia currently stands out as having experienced the most rapid decline in the share of agriculture, and has a relatively high share in manufacturing.

The most striking feature of the Latin American region is the high and increasing share of value added in services, which on average accounted for slightly less than 50 percent of total value added even in the early 1970s. Finally, the economies of Central and Eastern Europe have registered the standard structural transformation pattern characteristic of AEs since the onset of their transitions, with declines in agriculture and manufacturing shares and an increase in services.

[4]More precisely, the figures plot the corrected shares (actual – (country fixed effects – average fixed effect)) against the fitted values from the regression.

The significant cross-country and regional variation, both in the magnitude of the resource shifting out of agriculture and in the precise identity of the sectors that have expanded in its place reflects a number of factors. Growth in several regions, such as in Latin America and in sub-Saharan Africa, has been partly based on the extraction of non-renewable natural resources. Mining industries that account for much of value added in these countries tend to be highly capital intensive and thus offered limited employment opportunities to accommodate workers exiting sectors with lower average productivity, such as agriculture and informal retail trade (Figure 3).

We next focus on two selected LICs to illustrate the range of experiences in structural transformation across countries at similar levels of economic development. The particular choice of Bangladesh and Tanzania is meant to be representative of a LIC in Asia, the region that has followed the structural transformation path closest to the past experience of advanced economies, and one of the best performing LICs in sub-Saharan Africa, the region that has experienced the slowest pace of structural. Both countries started out with a very similar structure in the early 1970s (Figure 4). Nevertheless, Bangladesh experienced a sustained decrease in the share of agriculture and corresponding increases in services and, to a lesser extent, manufacturing, Tanzania, on the other hand, experienced a reversal in the traditional structural transformation path from the early 1980s until the mid 1990s. In fact, the share of manufacturing sector only started growing again since the mid 1990s, but did not regain the level observed in the early 1970s.

While the role of structural transformation in the development process of AEs is well documented, the experience of EMEs over the past four decades points to varying patterns. We illustrate the structural transformation experience of countries which have transitioned between income categories according to the World Bank's income per capita classification, by presenting four country cases: China, Korea, India, and Mexico (Figure 5).[5] China was classified as a LIC up until 1999 and has recently attained upper middle -income status, while Korea was classified as a lower middle-income country in 1970, and transitioned to high-income status. India, classified as a LIC until the early 2000s, transitioned to lower-middle income status, while Mexico attained upper-middle income status in the early 1990s.

China and Korea have experienced similar paths of structural transformation. China, whose income per capita has grown dramatically over the past 40 years, experienced a remarkably rapid decline in the share of real value added in agriculture, declining from more than 45 percent of total value added in 1970 to less than 5 percent by 2010. In turn, the manufacturing and services sectors shares have shown increases of over 10 percentage points

[5] The World Bank classifies countries into low-income, lower middle-income, higher middle-income, and high-income, based on the countries' gross national income (GNI) per capita in current prices since 1989. The World Bank updates the original thresholds by adjusting them for international inflation, the average inflation of the Euro Zone, Japan, the UK, and the United States. By adjusting for inflation, the thresholds remain constant in real terms over time. In this paper, the World Bank income thresholds were extended back to 1970 using GNI per capita data from the World Indicators.

each over the same period, although both have stabilized at around 30 percent since the early 2000s. Korea represents an atypical case of a high income country, in that the decline in manufacturing and increase in the share of services registered in other advanced economies has yet to occur.

Interestingly, the share of in services in China is considerably below that of economies with comparable levels of income per capita. For example, for upper middle-income countries with per capita incomes between US$5,000 and US$8,000 (China had a per capita income of around US$7,000 in 2010), the median services share was 50 percent in 2010, whereas the ratio in China was slightly below 30 percent. As a corollary, the manufacturing share is far above other countries at similar per capita income levels, and has increased over time. The opposite holds true for India (see also Kochhar et al., 2006), which stands outs as having a relatively high share of value added in services. Mexico's experience differs from these countries in that it has a relatively high and stable share of services and mining sectors over the period under consideration.

In summary, the stylized facts presented confirm the general path of a declining share of agriculture and increasing share of services across countries, while the pattern for manufacturing is less clear cut. Consistent with Bah (2011), we find considerable heterogeneity both across and within regions, as well as for countries at similar levels of economic development. We also find evidence that countries that have experienced significant increases in GDP per capita over the past four decades have undergone a process of structural transformation, although the specific patterns have varied.

IV. METHODOLOGY AND DATA

The stylized facts presented in the previous section suggest considerable heterogeneity in sectoral shares across country groups and regions. Quantile regression can be used to investigate cross-country heterogeneity which is masked when using more standard empirical techniques, such as ordinary least squares (OLS). [6] In particular, quantile regressions allow the coefficients on the regressors to vary according to the position of the dependent variable. A key advantage is that this approach avoids the (potentially serious) sample selection bias implied by running OLS on subsamples (stratified by the level of sectoral shares).[7] Both by allowing the marginal impact of the explanatory variables to vary across the distribution of the dependent variable, and by identifying factors that might be missed in OLS, quantile regressions potentially offer a richer picture of what has been driving sectoral shares over time and across countries.

[6] See Koenker and Hallock (2001) for an introduction to quantile regressions.

[7] In particular, OLS estimation assumes that the conditional distribution is homogenous, implying that the estimates of the relationship between the dependent variable and the independent variables are the same at all points of the conditional distribution. No assumptions about the homogeneity of the conditional distribution are needed in quantile regression.

The dependent variables are the real value added share in agriculture, manufacturing, and services sectors from the United Nations Statistics Division. Herrendorf et al. (2013) note that in countries like South Korea, the relative price of manufactured goods fell considerably with trade liberalization while real growth rate of manufacturing increased. This price effect can create a downward bias in nominal value added share of manufacturing. Data on employment by sector are also not uniformly available for all countries, with coverage of LICs being particularly patchy. Further, there is much less harmonization underlying the construction of employment data across a large set of countries, which leads to comparability issues.[8] As a result, we use real value added by sector instead of nominal value added and employment shares.

Drawing on the theoretical literature, we consider a range of supply and demand factors as controls. The baseline regressions include a broad set of fundamental determinants as controls. Many of these can be viewed as initial conditions or fundamental determinants which policymakers have limited ability to influence, at least over the short run. We include factor endowments, such as country size (proxied for by land area), population, arable land (in percent of total land area), and a dummy variable for island economies with populations less than 1 million (to control for possible scale effects that can effect levels of production).[9] We also include age dependency ratios (i.e., the non-working young and old populations as fractions of the labor force) as they can affect labor supply, and savings and consumption behavior.

Given the importance of income effects identified in the theoretical literature, the regressions also control for output per capita (log of GDP per capita in constant PPP U.S. dollars) and its square (to account for non-linearities). We also control for mineral resource endowment by including the share of mining in total value added to account for the fact that a large fraction of economic activity in resource-rich economies is subsumed by the value of resource extraction. Other controls include a dummy for transition economies, as their shift to market-based economic systems involved fundamental changes in the allocation of resources and in the structure of production.

Our baseline panel regressions comprise annual data over the period 1970–2010 for 168 countries. All regressions include time dummies to control for common macroeconomic shocks. We use data from the IMF's International Financial Statistics and World Economic Outlook, and supplement this with data from various other sources, including databases maintained by the World Bank. The panel of country and time-period observations is unbalanced. Appendix I presents the list of countries included in the sample.

[8] The UN Statistics Division provides continuous coverage on real and nominal value added by economic activity for a large number of countries between 1970 and 2010 and makes an explicit effort to harmonize the national accounts data so as to ensure comparability across different countries.

[9] Given the paucity of data on capital stocks for a large number of countries, this variable is not included in the baseline regressions but is considered in the robustness section.

To examine the policy drivers of structural transformation, we augment the baseline regressions with two additional groups of independent variables drawn from the theoretical and empirical literature. Product market institutions can influence the process of structural transformation by either facilitating or obstructing the reallocation of resources. To capture this, we include indices of market-oriented structural reforms in agriculture and networks (electricity provision and telecommunications) compiled by the IMF. A reduction in public intervention in the agricultural market can contribute to agriculture and non-agricultural growth by eliminating relative price distortions and facilitating the reallocation of labor, thereby raising sector-wide and aggregate productivity.[10] All indicators are rescaled to range between zero and one, with higher values corresponding to a greater degree of liberalization.

A second set of regressors includes a large number of macroeconomic and structural variables. Larger trade flows and trade liberalization policies have coincided with significant changes in the output structure of many emerging market economies. The extent of openness to international trade is captured by a *de facto* measure, namely the ratio of real exports plus imports to real GDP. It is widely argued that globalization can facilitate technology transfer and contribute to efficiencies in production. To proxy for this, we include data on gross FDI inflows in the non-resources sector.

Additional independent variables include the degree of financial sector development and human capital. By enabling greater diversification, risk sharing, and investment in higher productivity activities, financial development can facilitate resource allocation across the economy (Levine, 2005). We use the ratio of private credit extended by banks and other financial institutions to GDP as a proxy for the degree of financial development. Finally, we capture the effect of educational attainment on structural transformation by including the share of tertiary education enrollment from the WDI. Definition and sources for all variables are given in Appendix II.

V. EMPIRICAL RESULTS

This section presents regression analysis of the drivers of structural transformation. We start with simple cross-section regressions of the structural determinants of sectoral value added shares and then move on to quintile regressions to allow the effect of regressors to vary across the distribution of sectoral shares. We then analyze actual and predicted sectoral shares across income groups. Finally, we examine the role of structural reforms and other institutional variables in driving the process of structural transformation.

[10] The agricultural reform index measures the extent of public intervention in the market of each country's main agricultural export commodity. It includes the presence of export marketing boards and the incidence of administered prices. The networks index captures the degree of liberalization in the telecommunication and electricity markets, including the extent of competition in the provision of these services and the existence of an independent regulator.

A. Baseline Regressions

We begin with pooled OLS regressions of agriculture, manufacturing and services value added shares (Table 1) using annual data.[11] In line with the importance of land endowment for the sector, land area is positively and significantly associated with a higher agricultural share, and this effect is accentuated by the proportion that is arable land. Both of these variables are negatively related with the real value added share of services and manufacturing. Age dependency ratios are strongly negatively related with the share of value added in agriculture and manufacturing, but are positive and statistically significant for services, likely reflecting high demand for services resulting from the need to care for young and old populations. Population is negatively and significantly related with agriculture, but has a strong positive relationship with manufacturing. Consistent with Rodrik and McMillan (2011), we find that a high share of mining activity translates into lower value added shares across all sectors.

Consistent with the stylized facts, the relationship between the value added share of agricultural and the log of GDP per capita is negative and strongly significant, while the squared term is positive, suggesting a non-linear relationship and reflecting the fact that several AEs already have agricultural shares close to zero. Further, the relationship between GDP per capita and the manufacturing output share is non-linear, declining at higher levels of income per capita. Overall, the regression with fundamental factors explains close to 70 to 80 percent of the cross-country variation in the services and agricultural sector shares, respectively. The explanatory power of the fundamental factors in explaining manufacturing share is somewhat weaker than for the other sectors, explaining about 52 percent of the variation.

Quantile Regression Estimates

Quantile estimates can be quite different from OLS estimates because the relationship between sectoral output shares and the explanatory variables may differ considerably across the distribution of sectoral output shares. The findings for the full sample are presented in Table 2, with the relationship estimated at the 10th, 25th, 50th, 75th, and 90th quantiles.

For agriculture, the variables for which the coefficient estimates move most across the distribution are land area and population. As the share of agriculture rises, the importance of arable land and land area strengthens, reflecting the importance of initial endowments for comparative advantage in this sector. For manufacturing, the coefficient on population size is increasing over the distribution, possibly suggesting that economies are subject to increasing returns to scale in manufacturing, as argued initially by Kaldor (1966). For services, the effects of the age dependency ratios weaken as we move along the distribution, except for at the very top of the distribution which includes mostly AEs.

[11] Using a generalized linear model, and imposing that the share be between 0 and 100, yields similar results.

B. Actual versus Predicted Shares

Has the evolution of sectoral output shares across countries been in line with their fundamentals? In this subsection, we compare actual versus predicted sectoral shares based on quantile regressions. Figure 6 graphs the actual sectoral shares (simple average across income groups) and the fitted values for the median (50^{th} percentile) quantile regression over the period 1970-2010. For agriculture, average sectoral shares in EMEs have consistently been below the levels predicted by fundamentals, whereas for LICs the opposite is the case. A more nuanced pattern emerges across income groups for manufacturing shares. On average in AEs, manufacturing shares were well below the levels predicted by fundamentals until the period of "the great moderation". In EMEs, positive gaps (difference between actual and predicted values) have persisted since the 1980s, while LICs exhibit large negative gaps since the 1990s. On average, the pattern for services is broadly comparable across country groups, particularly since the 2000s, with levels higher than predicted by fundamentals.

These group averages mask considerable cross-country heterogeneity. Figure 7 compares fitted and actual valued added shares across sectors using median quantile regressions by country for 2010. Within LICs, a number of countries in Sub-Saharan Africa with real per capita incomes below US$300 per annum have agricultural shares significantly higher than predicted by fundamentals (lying above the 45 degree line). Many of these countries also have a large share of their labor force in agriculture, pointing to very low labor productivity in this sector. For manufacturing, a large number of LICs are situated below the 45 degree line; countries with the largest gaps between actual and predicted values include resource-abundant countries (Nigeria and Sierra Leone) and a few in East Africa (Ethiopia and Djibouti). The structural model also captures the wide variation in the services output share, with Liberia and Papua New Guinea as outliers relative to fundamentals.

Within EMEs, Albania, Syria, Paraguay, and Pakistan have real value added shares in agriculture that are well-above the levels predicted by their fundamentals, while Jordan, Iraq and Swaziland have exceptionally low shares. Within manufacturing, and consistent with the stylized facts, China, and other Asian countries (Thailand, Indonesia, Korea, and Malaysia) are outliers, with large positive gaps. Other countries with large positive gaps include El Salvador, Argentina, and Trinidad and Tobago in the Latin American and Caribbean region. A number of countries in the Middle East region (Algeria, Syria), as well as a few resource-abundant countries (Botswana, Kazakhstan) have manufacturing shares well below the levels predicted by fundamentals. Not surprisingly, island economies tend to have higher than predicted shares in the services sector, while China, Korea, and Poland have notably lower value added shares compared to predicted levels.

For AEs, consistent with the stylized facts, the agricultural real value added share is very low, averaging about 2-3 percent, while services account for over 60 percent of total value added in most cases. In manufacturing, Ireland, Japan, Germany, and Finland are outliers with large positive gaps, while the US, UK, France, Greece and Luxembourg have

manufacturing shares well below levels predicted by fundamentals. The situation is reversed for services, with the same set of countries exhibiting notable gaps.

C. Role of Policy and Institutional Variables

The previous section analyzed the relationship between structural variables and sectoral output shares. In this subsection, we augment the baseline regressions reported in Tables 1-2 with indices of product market liberalization (agriculture and networks), macroeconomic variables (trade openness, FDI in the non-resource sector, and domestic credit) and structural policy variables (tertiary education enrollment). We first present the OLS regressions before turning to quantile estimates. All regressions include the same set of control variables as in the baseline regressions, with the policy and structural variables entering with a one-year lag to control for potential endogeneity.[12]

Table 3 presents the OLS estimates. Among real-sector reforms, liberalization of the agriculture sector is negatively and significantly related to the real value added share in agriculture, but positively with manufacturing and services share. This result is consistent with the view that agricultural sector liberalization can increase productivity in the sector an free up resources to move to other more productive sectors. Moreover, the coefficient estimates for reforms in the electricity and telecommunications sectors (network) are positive and statistically significant for the services sector share, and negative for agriculture. Trade openness shows a very strong, positive association with the real value added share of manufacturing, while the converse holds for agriculture. Interestingly, higher FDI in the non-resource sector is positively associated with a higher agricultural share, but is insignificant for manufacturing and negative for services. In addition, financial depth (as proxied by the ratio of private credit to GDP) and tertiary education enrollment exhibit a positive and significant association with the services share but not manufacturing.

Endogeneity issues could be at play for some variables since higher-income countries could demand better education, and telecom provision feeds directly into services output. Moreover, countries with a high share of manufacturing value added could have high levels of export-oriented manufacturing. However, the fact that these variables are consistently significant even after controlling for the basic structural features of economies, including income per capita and its squared term, suggests that they can independently influence the speed of structural transformation.

Quantile Regression Estimates

The quantile estimates suggest some commonalities, but also important differences in the determinants of sectoral shares at various points in the distribution (Table 4, Figure 8). Figure

[12] Note that the sample size is smaller than in the baseline regressions given the paucity of data on reform variables for some countries.

8 traces the change in the coefficient estimates as the quantiles increase, holding all other variables constant. The solid line in each figure plots the point estimate from quantile regressions ranging from 0.1 to 0.9 percentile of the distribution and the associated confidence interval. The straight line represents the estimates for the average sectoral share (i.e., the OLS results in Table 3). The majority of the graphs show little "overlap" between the quantiles line and average OLS estimates, suggesting that there are indeed differences in both the magnitude and significance of the regressors at different points along the sectoral value added distributions. Indeed, several variables (tertiary education, networks, credit) that were insignificant in the OLS regressions for the average manufacturing share in Table 3 (column 2), turn out to be significant at various points along the distribution.

Comparing across quantiles, the coefficients on agricultural policy reforms are negative and statistically significant, increasing along the agricultural share distribution (Table 4, columns 1-5). We find evidence that these reforms are positively associated with manufacturing and services shares, especially at the upper ends of their respective distributions. Indeed, agricultural sector reforms appear to be more important for countries with a high share of real value added in manufacturing than for countries with a low share (columns 6-10). The coefficient for agricultural reforms increases from -2 for observations in the 10^{th} percentile (column 6) to over 1 for above-median observations (column 8), with the differences in coefficient statistically significant. Likewise, network reforms are positively and significantly associated with manufacturing and services shares at low levels (below-median observations, columns 6-7, 11-12) but their importance declines along the distribution, particularly for manufacturing.

Tertiary education enrollment, which was insignificant in the OLS regressions for manufacturing, becomes positive and statistically significantly for above-median real value added manufacturing shares (Table 4, columns 9-10), suggesting that more sophisticated manufacturing products require higher levels of education. Moreover, it is strongly increasing along the services share distribution (columns 13-15). The picture is more mixed for the availability of credit, which is only positive and significant for the lower end of the manufacturing distribution (the 10^{th} percentile, column 6), possibly reflecting the absence of own sources of financing for production. For services, private credit is strongly significant at the median and 75^{th} percentile of the distribution (columns 13-14).

Trade openness is important for manufacturing across all points in the distribution, with the coefficient always positive and highly significant (columns 6 – 10). Interestingly, it is negative and significant for countries with below-median share of services (columns 11-13), only becoming positive for the 90^{th} percentile. FDI is only significant for low and above-median manufacturing shares, negative and significant for the services sector, and insignificant for agriculture shares.

How have the policy and institutional drivers of real value added sectoral shares evolved over time? In Table 5 (top and bottom panels), we re-estimate the model presented in Table 4 over various sub-periods: the pre-globalization years (1970-1992), and the years following it,

which also coincide with transition from centrally planned economies in Central and Eastern Europe. While the models' explanatory power is somewhat higher in the post-1992 period, a time pattern also emerges on the importance of the various factors.

During the early period of the sample (1970-1992, top panel), reforms in the electricity and telecommunications (network) markets are positively and significantly associated with above-median values of real value added share in agriculture, but are negatively associated with the manufacturing share, while the coefficient for services is positive and strongly significant for the 25th percentile and the median shares. Conversely, in line with results reported in Table 4, network reforms are strongly positively associated with below-median manufacturing shares in the globalization period (post 1992, bottom panel). The coefficient on the agricultural reform variables in the manufacturing regressions is larger in magnitude in the pre-1992 period, but, in contrast to the subsequent period, these reforms are positively and significantly associated with the services share even at the low end of the distribution.

Trade openness is associated with a higher agricultural share and is positive and significant at various points in the services share distribution in the pre-1992 period, but only for low values of manufacturing shares. Openness to trade becomes more important across the manufacturing distribution in the post-1992 period, with all coefficients positive and statistically significant, while it becomes negative and statistically significant for the services share. Likewise, FDI in the non-resource sector is positively and significantly associated with agriculture shares at various points of the distribution in the pre-1992 period, but this effect becomes insignificant and even negative during the subsequent period. By contrast, the coefficients on FDI in the services share regressions become positive and statistically significant for median service shares in the post-1992 period. For manufacturing shares, the coefficients on FDI remain positive but are slightly smaller in the post-1992 period. Finally, domestic credit is positively associated with low levels of the services share as compared to the post-1992 period.

VI. ROBUSTNESS

In this section we perform several tests to assess the robustness of the findings presented in the previous section. We first check whether our baselines results hold when restricting the sample to EMEs and LICs alone. We then investigate whether our results are affected by the inclusion of alternative policy variables. Finally we include other controls to check for a possible relevant source of omitted variables bias.

Different Samples

Given that most AEs have already undergone the process of structural transformation, regressions that pool data for countries at very different levels of development could provide a biased picture. To examine this, we restrict the regressions reported in Table 2 to a sample of EMEs and LICs. As can be seen from Table 6, country characteristics and other fundamentals continue to be significant drivers of real value added shares in agriculture, manufacturing, and services, with the explanatory power of the models remaining roughly

the same. To further examine this, we also compared actual versus predicted values for these regression. The results, not reported here but available upon request, suggest that the basic thrust of our analysis remains unchanged.

Alternative Variables

Since FDI and the ratio of exports plus imports to GDP are *de facto* and not *de jure* measures of openness to trade and globalization, issues of endeogeneity could be at play. Likewise, domestic credit could be endogenous to the structure of the economy. To account for this, we replace the FDI variable with an index of capital account openness (from Chinn and Ito, 2006, with data updated to 2011), trade openness with an index of trade liberalization (average tariff rates), and domestic credit with an index of financial sector reforms (from Abiad et al., 2008). All indicators are rescaled to range between zero and one, with higher values corresponding to a greater degree of liberalization. We also replace tertiary with secondary school enrollment, as this variable is more likely to be important for EMEs and LICs.[13]

The results reported in Table 7 indicate that the financial reform index has a very strong explanatory power for the real value added share of services and is significant across the distribution. This could be capturing the rapid growth of the financial services sectors over the past few decades. Interestingly, financial sector reforms are negatively and significantly associated with manufacturing and agricultural sector shares. Moreover, low average tariff rates appear to be relevant across the agriculture shares distribution, but are negatively and significantly associated with the manufacturing share. The capital account openness indicator is strongly positive for the agriculture and manufacturing shares, and is significant at various points of their respective distributions, mirroring the results for FDI from the baseline specification reported in Table 4. Finally, switching secondary for tertiary education enrollment makes little difference for our results, although the magnitude of the coefficients is smaller. We also find that the basic thrust of our results on the importance of product market reforms for re-allocating resources to the manufacturing and services sectors continues to hold.

Additional Variables

As a final robustness check, in Tables 8.1-8.3 we introduce additional variables to the specification reported in Table 4. The sample size for the regressions varies depending on data availability.

As in Nickell et al. (2008), we first examine the role of capital endowment (as measured by the log of the real capital stock) in driving changes in the production structure of countries. We find that a higher capital stock is negatively and significantly associated with agricultural

[13] The sample size now drops from 93 to 71 countries as not all indicators are available for every country.

and services shares (Tables 8.1-8.3), and is positively and significantly associated with the manufacturing share. In particular, we find that the importance of the capital stock decreases along the manufacturing distribution, with the coefficient estimates highest at low levels of manufacturing. This result is suggestive of the importance of infrastructure for manufacturing performance.

We next assess whether the quality of political institutions affects the structure of an economy. This variable, taken from Polity IV, measures the degree of constraints on executive power. Our results indicate that the quality of political institutions is a significant determinant of real value added shares in agriculture (panel A) across the distribution, and is more important for service at the lower end of the distribution than at the higher end. Interestingly, the quality of political institutions is negatively and significantly associated with the manufacturing share (panel B), pointing to a differential impact of the quality of political institutions on structural transformation

Rodrik and McMillan (2011) note that overvalued exchange rates can impede the development of tradable sectors, particularly modern manufacturing. To examine this, we use the log level of the real effective exchange rate (REER) compiled by the IMF (an increase denotes appreciation of the currency). Our results indicate that an appreciation of the currency is generally strongly positively associated with a higher real value added share of agriculture and above-median level of service shares. For manufacturing, controlling for trade openness, a depreciation of the real exchange rate is only associated with a higher manufacturing share at the lower end of the distribution, suggesting greater price-sensitivity to relative price changes at this end of the spectrum. By contrast, the evidence indicates a positive and significant association between currency appreciation and manufacturing share for above-median observations.

Policies, regulations, and institutional factors could also lead to the barriers to labor mobility, preventing resource movements. To examine this, we include an index of labor market regulations, which is constructed using principal components analysis on four labor market flexibility indicators (labor tax wedge, the ratio of minimum to mean wage, unemployment benefits coverage, and severance pay after 9 months) from Aleksynska and Schindler (2011). A higher value of the index denotes greater labor market flexibility. Given that a large share of the labor force in EMEs and LICs is informal, this exercise can be viewed as a preliminary exploration of the role of labor market rigidities in impeding structural change. Our results indicate that greater labor market flexibility is strongly associated with higher real value added shares in agriculture and with services shares for the median and 75th percentile. However, we find little evidence of labor flexibility in explaining variation in manufacturing shares across countries. The coefficient on this variable is instead negative and statistically significant across most of the manufacturing shares distribution.

We further examine whether globalization has played a role in driving the patterns of structural change by including the Dreher et al. (2008) index of economic globalization, which measures data on real and financial flows and restrictions (hidden import barriers,

mean tariff rates and capital account restrictions). Higher index values denote greater globalization. The results suggest that greater globalization is negatively and strongly associated with the real valued added shares in agriculture. For manufacturing, we find that even after separately controlling for trade openness and FDI inflows, coefficient estimates for the globalization index are positive and significant for manufacturing shares below the median of the distribution. In line with the rapid growth in services trade and expansion of the services sectors across income groups, we find that the coefficients on the globalization index are positive and statistically significant across the distribution.

Finally, the theoretical literature has emphasized "supply factors, such as differences in sectoral productivity growth, to explain the long-run patterns in the sectoral reallocation of resources. These papers show that productivity growth differences can account for differences in economic structure along the development path. The paucity of data on sectoral capital stocks across a broad spectrum of countries, however, renders such an analysis challenging. Instead, we include a measure of aggregate total factor productivity in the sectoral share regressions. Consistent with Nickell et al. (2008), we find little evidence of a significant association between total factor productivity and sectoral value added shares. This result could be capturing the fact that some of the variables already considered (in particular the policy and institutional measures) influence productivity and that this channel is partially accounted for already.

VII. CONCLUSION

Over this past four decades, structural transformation has been a defining feature of most economies. In this paper, we find that while country fundamentals (such as endowments, population, dependency ratios) explain a large proportion of the variation in sectoral shares across countries, structural reforms, globalization, and other policy and institutional variables also matter for explaining observed patterns of structural change. In particular, we find that product market reforms are associated with greater resource reallocation across sectors, while globalization has a varied impact across sectors, but is most significant for manufacturing and services sectors. Our results also point to the important role of human and physical capital for structural transformation. Finally, our results highlight the heterogeneous effects of these variables on sectoral shares both across countries and over time.

At the current conjuncture, many EMEs and LICs face the challenge of sustaining economic growth and catching up to AEs, a process that involves structural transformation, including both faster rates of factor accumulation and growth in total factor productivity (IMF, 2013). Indeed, history suggests that countries that managed to pull out of poverty and get richer are precisely those that were able to diversify away from low-productivity sectors. In many AEs, overcoming barriers to increased productivity growth in services remains a priority for boosting medium-term growth prospects (OCED, 2012).

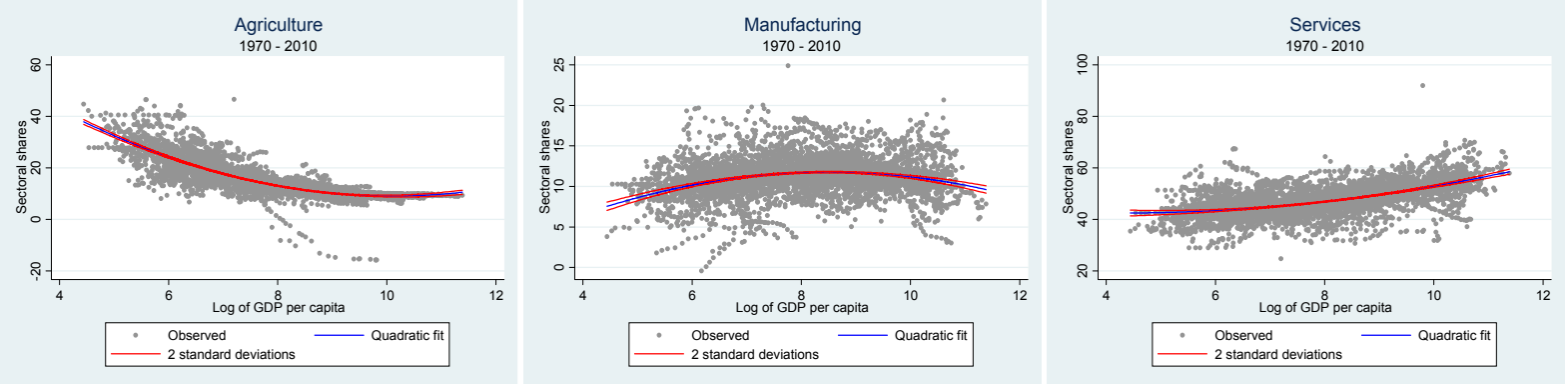
From a policy perspective, our results suggest that large gains can be achieved by liberalizing and enhancing the productivity of the agricultural sector in EMEs and LICs because this is a first step in releasing resources to other sectors and raising incomes.

Moreover, given the strength of the trade openness variable across the manufacturing distribution and the real exchange rate level at low levels, attention needs to be given to promoting price competitiveness and diversified trade. Reallocation both across and within sectors will also require physical capital accumulation (in basic infrastructure such as power and transport) and adequate financing for private sector activity. For countries with already high manufacturing shares, devising a growth strategy based more on innovation and a deeper stock of human capital is likely to be important. On the services side, our results suggest that reforms in the distribution sectors (telecommunication and electricity), strengthening human capital and greater labor market flexibility, particularly in countries with high services shares, can have a significant positive impact on productivity growth in the sector.

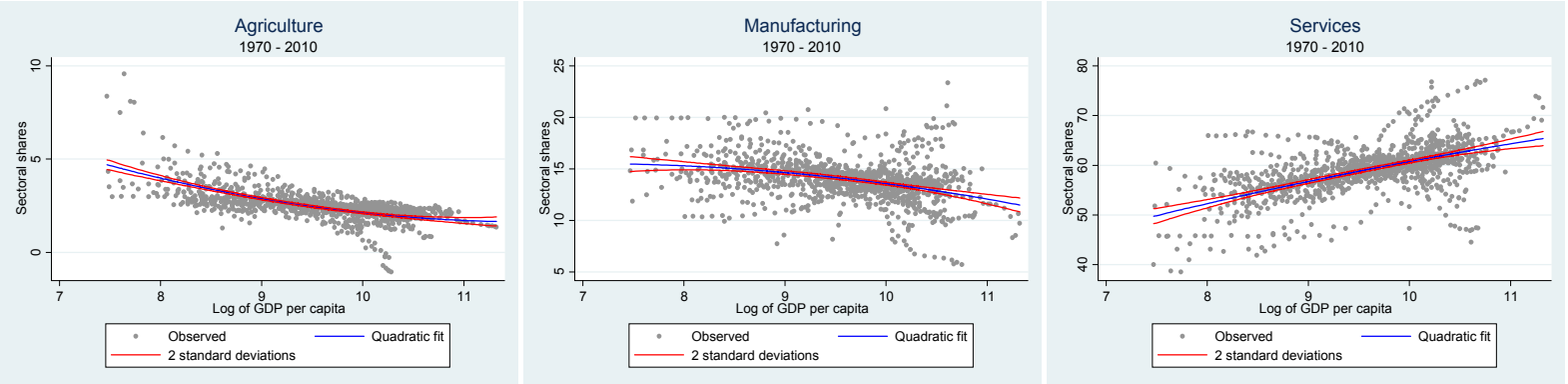
Several caveats are in order, however. First, policy reforms and other institutional drivers of sectoral value added shares are likely to be endogenous to the structure of the economy. In this regard, appropriate instrumental variables that could resolve this and other sources of endogeneity are particularly difficult to find. As such, our results should be taken as evidence of strong associations rather than causation. Second, by examining the broad categories of agriculture, manufacturing, and services, we are ignoring developments within AEs which require a shift of emphasis from goods production to the production of services (Jorgenson and Timmer, 2011). In these countries, paying greater attention to individual service sectors to understand the process of economic growth and structural change is likely to be important. Third, our empirical models are able to explain significant proportion of the cross-sectional variation in the real value added shares of the agriculture and services sectors, but somewhat less so in manufacturing. This finding points to the importance of further understanding the determinants of manufacturing sector performance. Finally, growth prospects across countries ultimately depend on productivity-enhancing structural change, which requires an in-depth analysis of intra-sectoral productivity dynamics. Pursuing these issues in detail is beyond the scope of this paper and we leave this for future work

Figure 1. Real Value Added Shares and real GDP per capita, 1970-2010

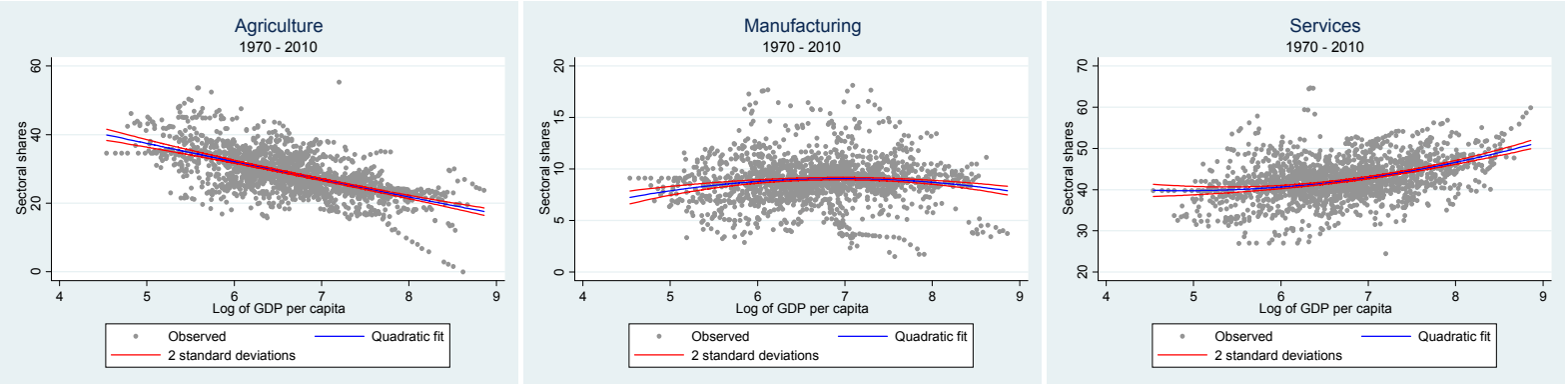
Full Sample



Advanced economies

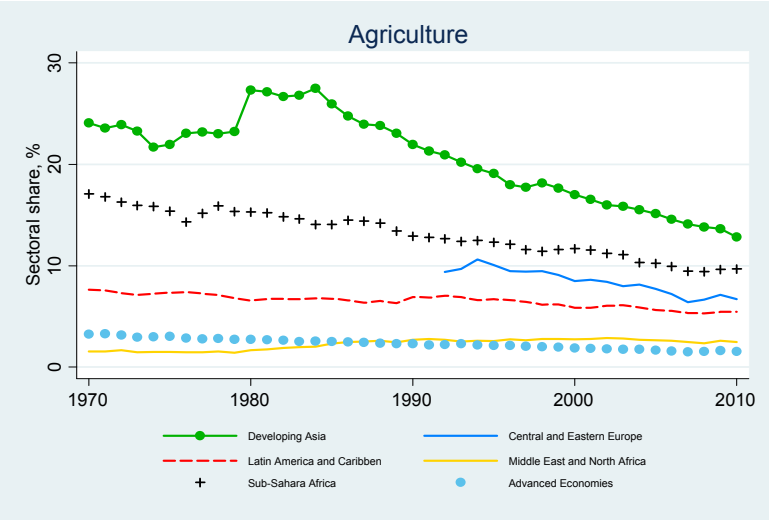


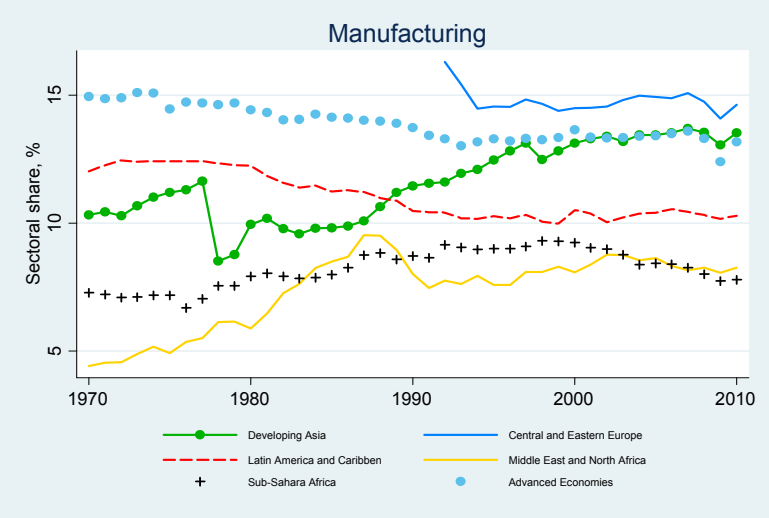
EMEs and LICs



Note: These figures plot the corrected shares (actual – (country fixed effects – average fixed effect)) against the fitted values from the regression that includes income per capita, its square, and country fixed effects.

Figure 2. Shares by Sector of Economic Activity in EMs and LICs by Region
(Weighted Average by Real GDP pc)





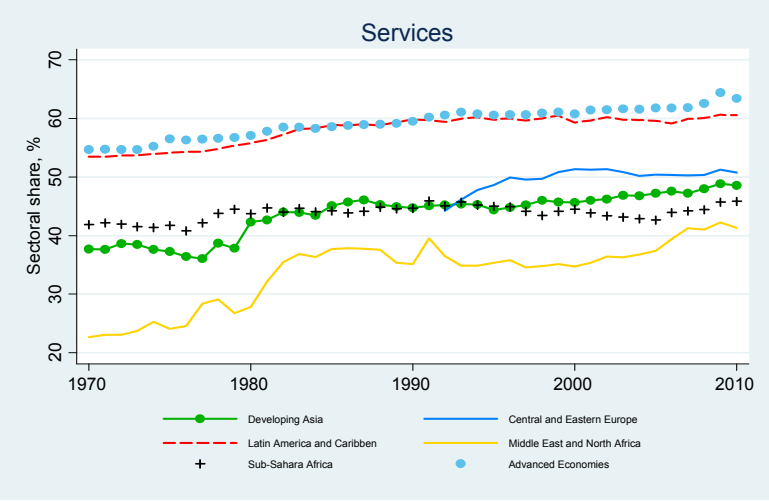


Figure 3. Mining vs. Manufacturing and Services Shares in Total Value Added

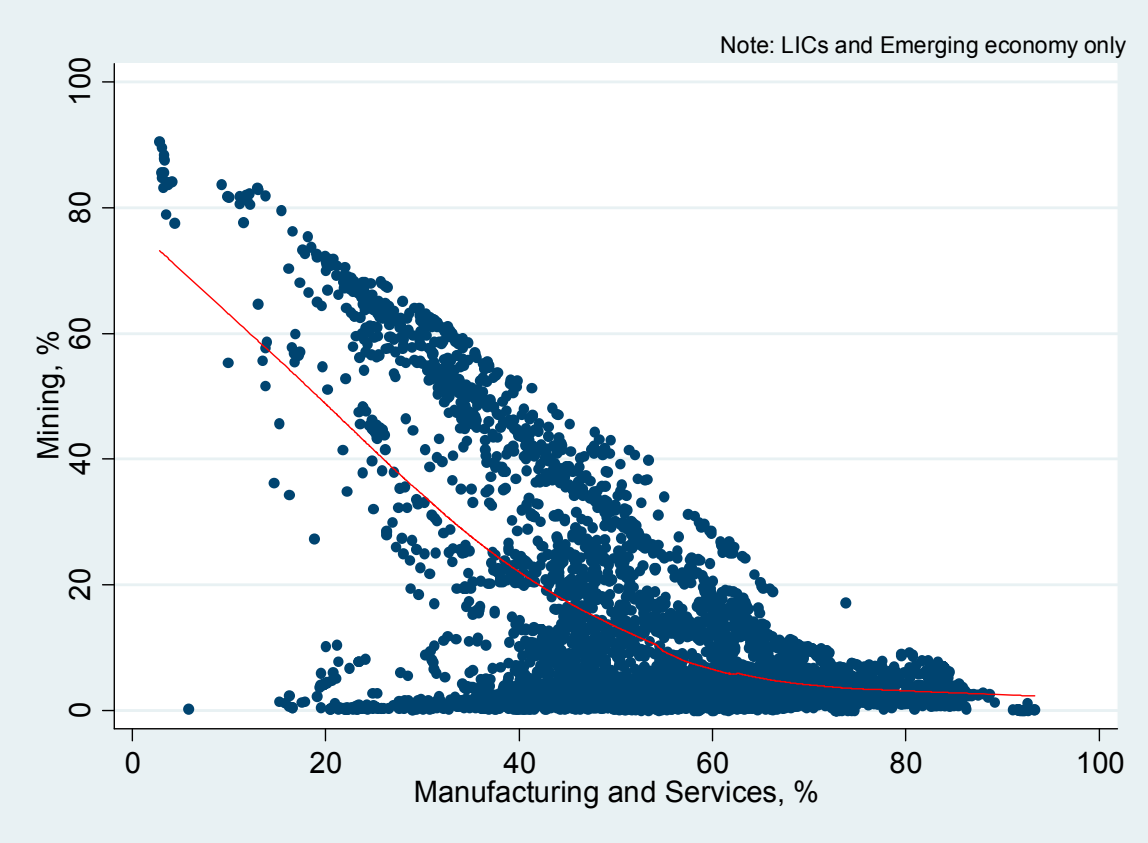


Figure 4. Real Value Added Shares by Sector of Economic Activity in Selected LICs, 1970-2010

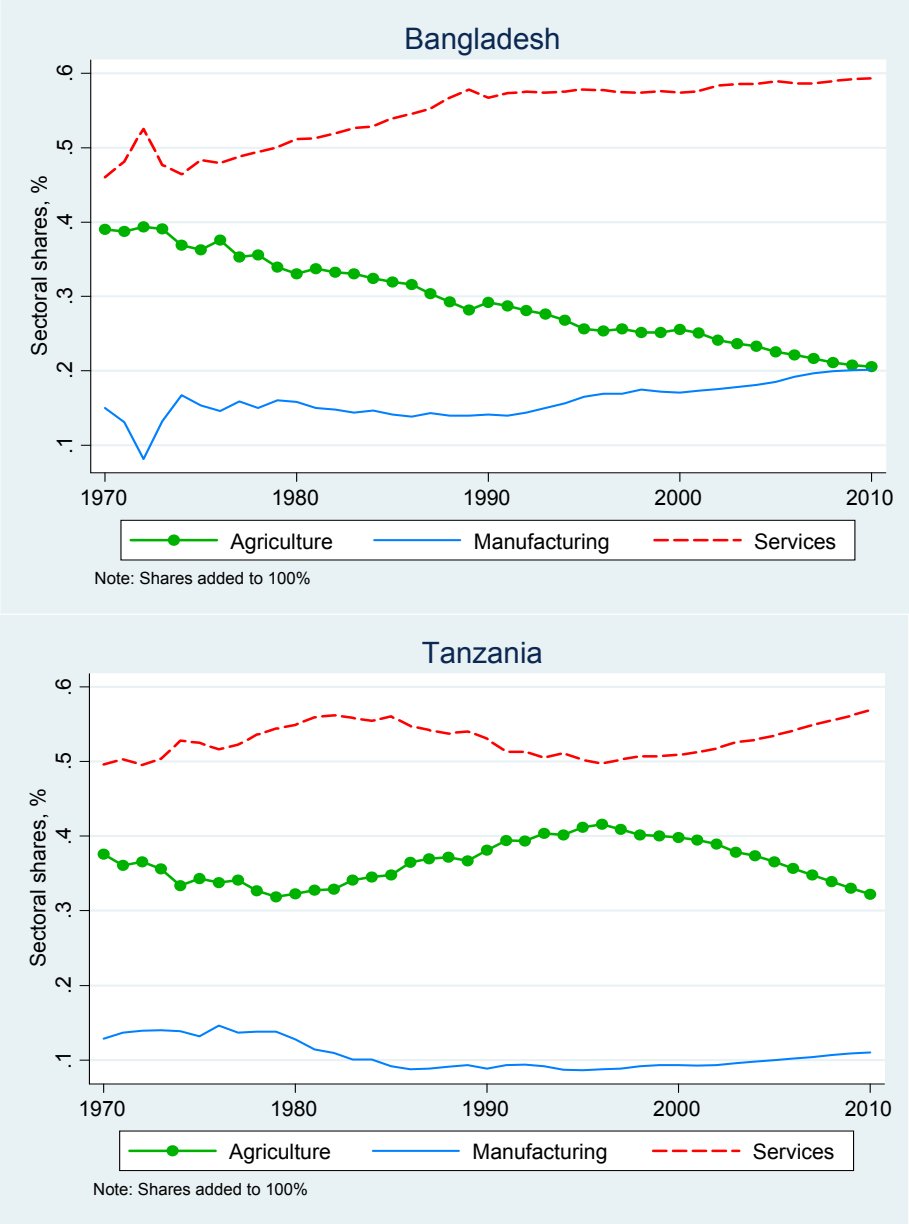


Figure 5. Real Value Added Shares by Sector of Economic Activity in Selected EMEs

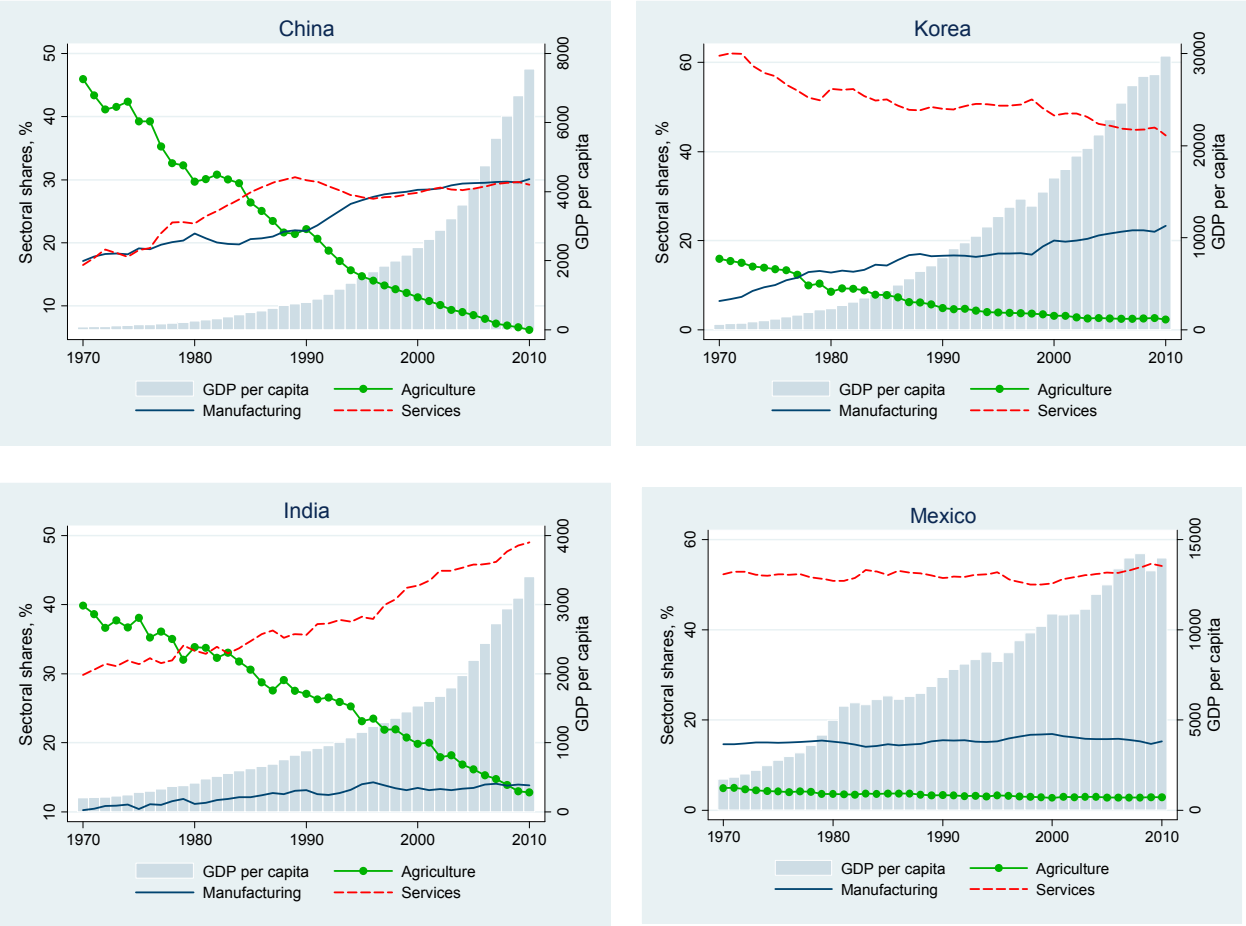


Figure 6. Actual vs. Predicted Sectoral Shares Across Income Groups, 1970-2010
(simple average across income groups; predicted values are medians)

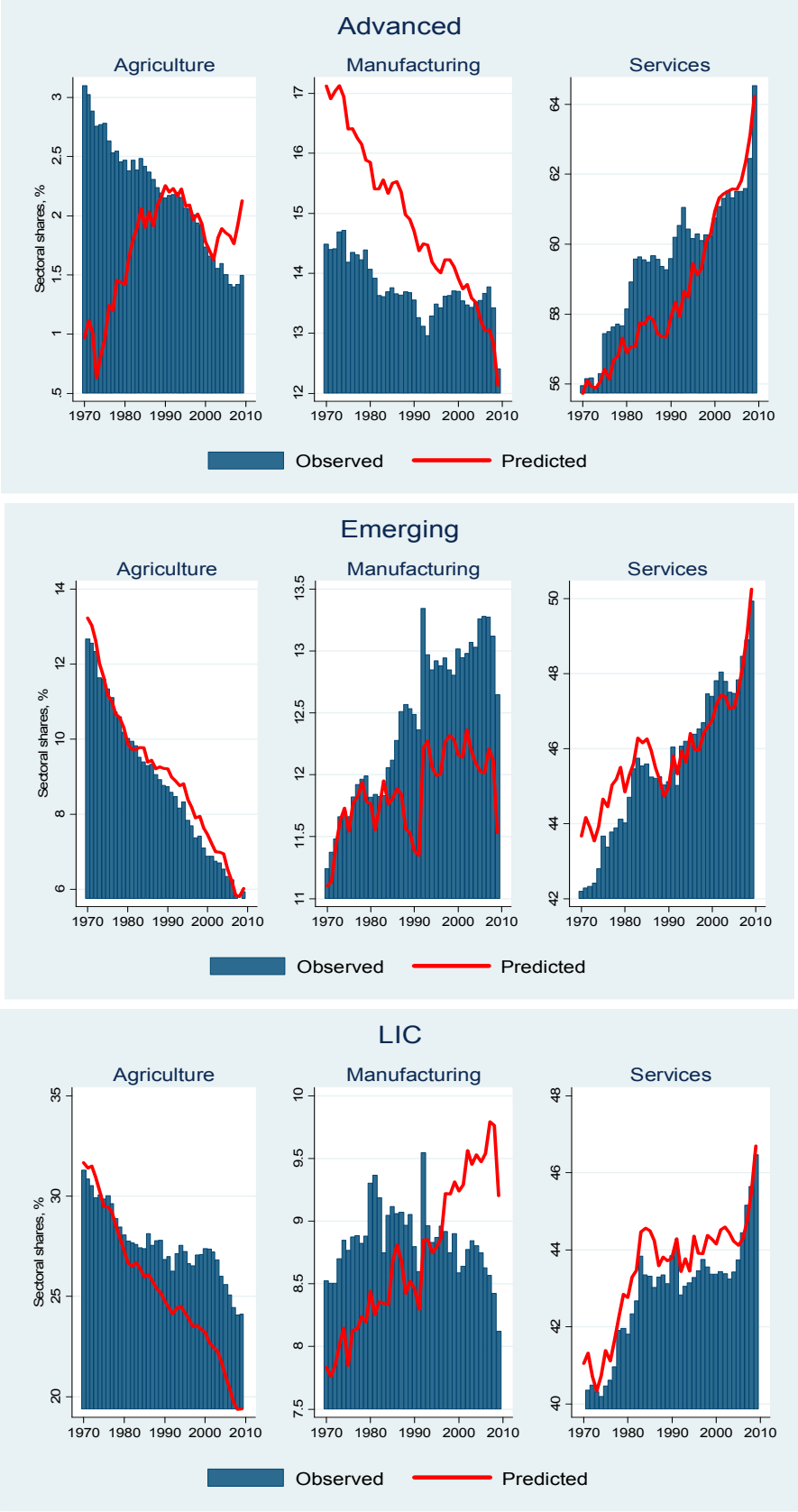
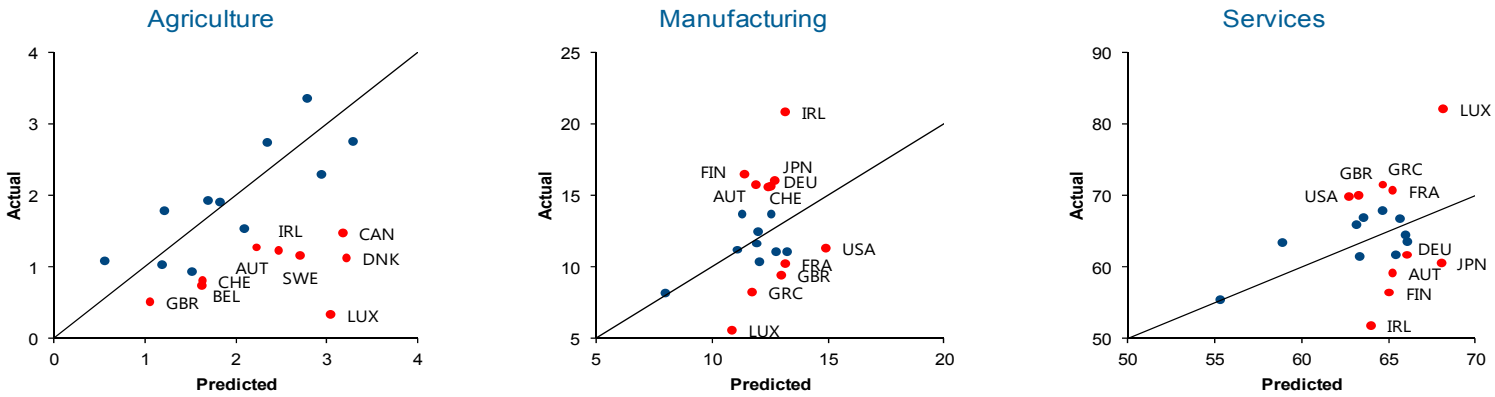
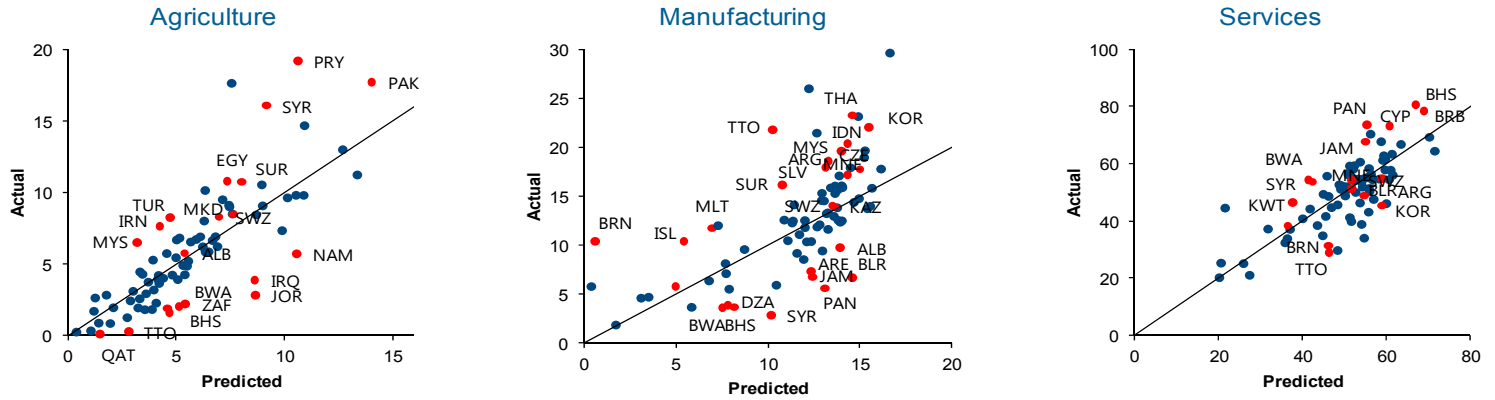


Figure 7. Actual vs. Predicted (Median) Shares by Countries, 2010

Advanced



Emerging



LICs

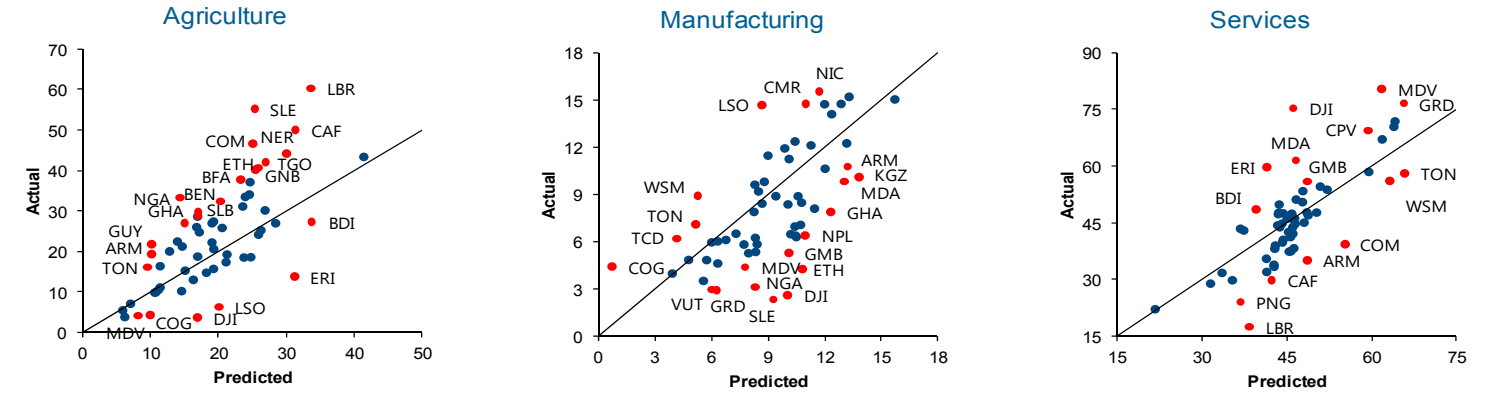


Figure 8. Comparison of Quantile Regression and OLS Coefficient Estimates

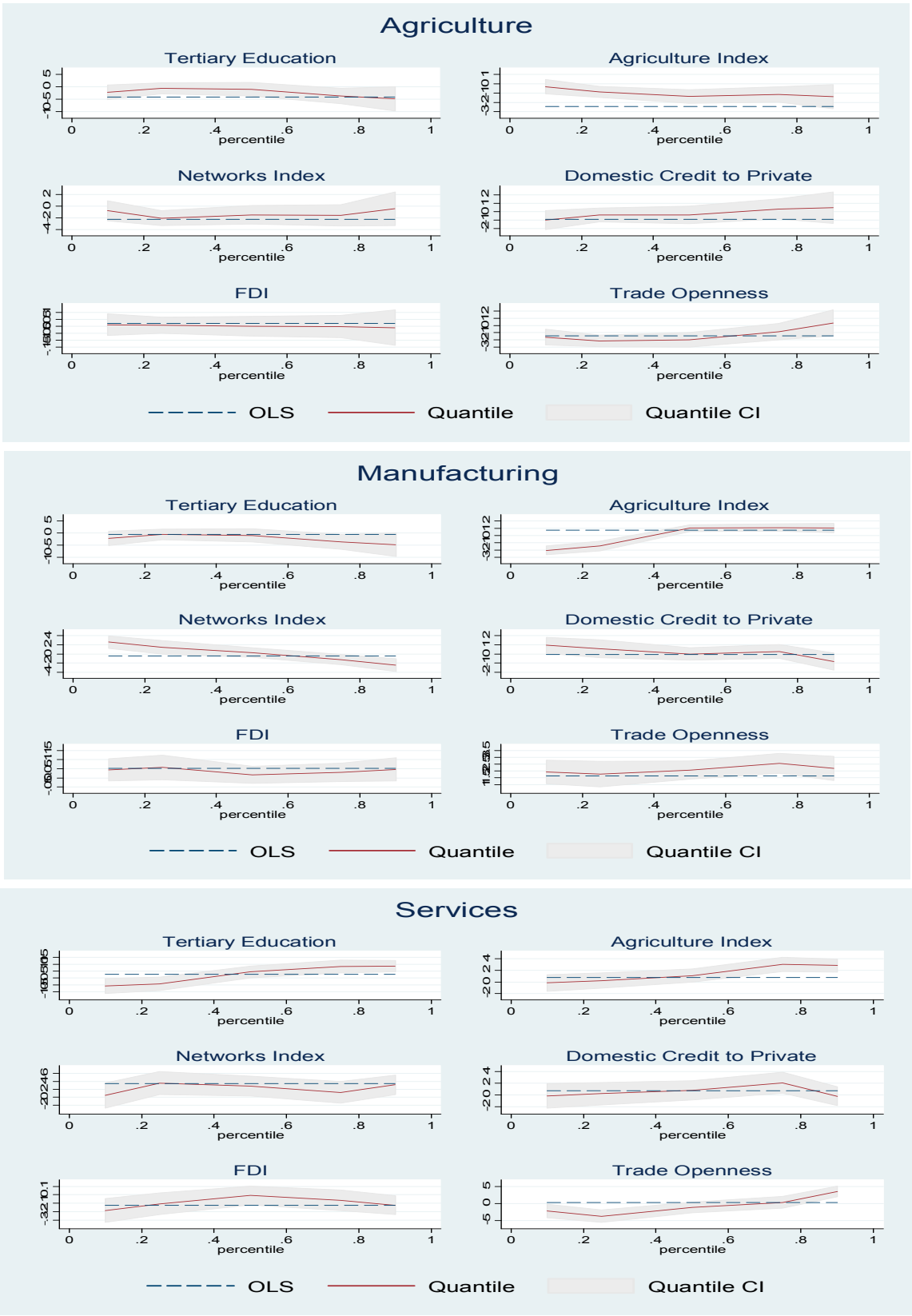


Table 1. Role of Country Fundamentals: OLS Regressions

	(1) **Agriculture**	(2) **Manufacturing**	(3) **Services**
Transition Economy [Dummy]	-2.156	2.762	-3.174
	[0.406]***	[0.235]***	[0.509]***
Island Economy [Dummy]	0.872	-3.779	6.716
	[0.379]**	[0.220]***	[0.475]***
Mining Output Share	-0.052	-0.192	-0.55
	[0.007]***	[0.004]***	[0.009]***
Land Area [Log]	1.083	-0.254	-0.389
	[0.081]***	[0.047]***	[0.101]***
Population [log]	-1.893	0.983	-0.056
	[0.103]***	[0.060]***	[0.129]
Arable Land	6.831	-1.351	-2.819
	[0.887]***	[0.514]***	[1.113]**
Age dependency ratio - Young	-0.083	-0.027	0.146
	[0.009]***	[0.005]***	[0.011]***
Age dependency ratio - Old	-0.127	-0.214	0.475
	[0.025]***	[0.014]***	[0.031]***
GDPPC [log]	-34.648	7.788	14.33
	[0.714]***	[0.414]***	[0.895]***
Square of (GDPPC [log])	1.54	-0.366	-0.522
	[0.045]***	[0.026]***	[0.056]***
Constant	207.133	-31.149	-34.703
	[3.180]***	[1.843]***	[3.989]***
Observations	5,341	5,341	5,341
R-squared	0.795	0.516	0.661
Number of countries	168	168	168
Time dummies	YES	YES	YES

Robust standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 2. Role of Country Fundamentals (Full Sample): Quantile Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Agriculture					**Manufacturing**					**Services**				
	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90
Transition Economy [Dummy]	0.205	-0.283	-1.108	-2.846	-4.525	1.388	1.818	2.408	3.248	2.949	-6.824	-3.768	-1.922	-0.39	0.471
	[0.481]	[0.348]	[0.448]**	[0.584]***	[0.674]***	[0.359]***	[0.334]***	[0.250]***	[0.297]***	[0.449]***	[0.898]***	[0.564]***	[0.592]***	[0.620]	[0.800]
Island Economy [Dummy]	1.395	0.838	0.806	2.546	0.646	-3.166	-3.206	-4.783	-3.439	-1.917	4.105	7.301	8.471	6.615	9.644
	[0.449]***	[0.325]***	[0.418]*	[0.544]***	[0.629]	[0.335]***	[0.312]***	[0.233]***	[0.277]***	[0.419]***	[0.838]***	[0.526]***	[0.552]***	[0.578]***	[0.747]***
Mining Output Share	-0.041	-0.041	-0.034	-0.037	-0.017	-0.128	-0.158	-0.191	-0.197	-0.21	-0.516	-0.51	-0.528	-0.577	-0.633
	[0.009]***	[0.006]***	[0.008]***	[0.011]***	[0.012]	[0.007]***	[0.006]***	[0.005]***	[0.005]***	[0.008]***	[0.017]***	[0.010]***	[0.011]***	[0.011]***	[0.015]***
Land Area [Log]	0.33	0.492	0.598	0.833	1.148	0.046	-0.018	-0.213	-0.447	-0.582	0.301	-0.159	-0.04	-0.215	-0.639
	[0.095]***	[0.069]***	[0.089]***	[0.116]***	[0.134]***	[0.071]	[0.066]	[0.050]***	[0.059]***	[0.089]***	[0.178]*	[0.112]	[0.117]	[0.123]*	[0.159]***
Population [log]	-0.239	-0.67	-0.97	-1.567	-2.285	0.557	0.864	0.874	1.112	1.31	-0.084	0.512	-0.262	-0.968	-0.355
	[0.122]**	[0.088]***	[0.114]***	[0.148]***	[0.171]***	[0.091]***	[0.085]***	[0.063]***	[0.075]***	[0.114]***	[0.228]	[0.143]***	[0.150]*	[0.157]***	[0.203]*
Arable Land	3.007	2.202	2.8	4.204	4.058	1.723	-0.399	-1.018	-2.887	-3.902	9.819	1.516	0.32	-2.394	-9.192
	[1.051]***	[0.760]***	[0.978]***	[1.274]***	[1.471]***	[0.783]**	[0.730]	[0.546]*	[0.648]***	[0.981]***	[1.961]***	[1.231]	[1.293]	[1.353]*	[1.747]***
Age dependency ratio - Young	-0.057	-0.045	-0.042	-0.087	-0.092	-0.036	-0.04	-0.023	-0.038	-0.059	0.208	0.133	0.135	0.126	0.184
	[0.010]***	[0.007]***	[0.009]***	[0.012]***	[0.014]***	[0.008]***	[0.007]***	[0.005]***	[0.006]***	[0.010]***	[0.019]***	[0.012]***	[0.013]***	[0.013]***	[0.017]***
Age dependency ratio - Old	-0.081	-0.042	-0.014	-0.108	-0.14	-0.035	-0.124	-0.185	-0.262	-0.344	0.703	0.495	0.459	0.332	0.344
	[0.029]***	[0.021]**	[0.027]	[0.036]***	[0.041]***	[0.022]	[0.020]***	[0.015]***	[0.018]***	[0.027]***	[0.055]***	[0.034]***	[0.036]***	[0.038]***	[0.049]***
GDPPC [log]	-26.965	-29.044	-34.765	-38.713	-43.236	8.31	8.155	9.404	8.348	6.632	21.884	16.44	10.388	7.834	8.938
	[0.846]***	[0.612]***	[0.787]***	[1.026]***	[1.184]***	[0.630]***	[0.588]***	[0.439]***	[0.522]***	[0.790]***	[1.578]***	[0.991]***	[1.041]***	[1.089]***	[1.406]***
Square of (GDPPC [log])	1.259	1.339	1.592	1.711	1.899	-0.449	-0.417	-0.461	-0.406	-0.314	-0.928	-0.644	-0.293	-0.135	-0.156
	[0.053]***	[0.039]***	[0.050]***	[0.065]***	[0.075]***	[0.040]***	[0.037]***	[0.028]***	[0.033]***	[0.050]***	[0.099]***	[0.062]***	[0.065]***	[0.069]**	[0.088]*
Constant	142.012	158.885	192.545	230.325	266.16	-34.306	-35.031	-37.04	-29.052	-18.295	-93.867	-59.661	-18.713	11.276	1.206
	[3.769]***	[2.726]***	[3.507]***	[4.569]***	[5.275]***	[2.808]***	[2.619]***	[1.957]***	[2.323]***	[3.518]***	[7.031]***	[4.414]***	[4.635]***	[4.851]**	[6.264]
Observations	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341	5,341
(pseudo) R-square	0.422	0.527	0.604	0.639	0.648	0.327	0.372	0.364	0.299	0.259	0.435	0.463	0.451	0.45	0.448
Number of countries	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 3. Role of Policy and Institutional Factors: OLS Regressions

	(1) Agriculture	(2) Manufacturing	(3) Services
Policy Variables			
Tertiary Education [lag]	-4.061	-0.587	2.69
	[1.257]***	[0.838]	[1.710]
Agriculture Index [lag]	-2.442	0.718	0.759
	[0.335]***	[0.223]***	[0.456]*
Networks Index [lag]	-2.227	-0.444	3.473
	[0.742]***	[0.495]	[1.010]***
Domestic Credit to Private [lag]	-0.903	-0.052	0.75
	[0.486]*	[0.324]	[0.661]
FDI & Non-resouce Countries [lag]	0.02	0.052	-0.126
	[0.033]	[0.022]**	[0.045]***
Trade Openness [lag]	-1.413	1.631	0.359
	[0.468]***	[0.312]***	[0.637]
Other Variables			
Transition Economy [Dummy]	-3.451	0.779	1.34
	[0.643]***	[0.429]*	[0.876]
Island Economy [Dummy]	3.323	-2.911	0.086
	[0.767]***	[0.512]***	[1.044]
Mining Output Share	-0.029	-0.184	-0.597
	[0.013]**	[0.009]***	[0.018]***
Land Area [log]	0.566	0.332	-0.519
	[0.131]***	[0.087]***	[0.178]***
Population [log]	-1.025	0.512	-0.462
	[0.154]***	[0.102]***	[0.209]**
Arable Land	0.371	-1.623	5.094
	[1.210]	[0.807]**	[1.647]***
Age dependency ratio - Young	-0.092	-0.071	0.195
	[0.013]***	[0.009]***	[0.017]***
Age dependency ratio - Old	0.037	-0.173	0.264
	[0.042]	[0.028]***	[0.057]***
GDPPC [log]	-31.825	10.989	3.672
	[1.257]***	[0.838]***	[1.710]**
Square of (GDPPC [log])	1.401	-0.631	0.196
	[0.083]***	[0.055]***	[0.113]*
Constant	181.345	-35.554	10.133
	[5.600]***	[3.734]***	[7.621]
Observations	1,684	1,684	1,684
(pseudo) R-square	0.862	0.505	0.708
Number of countries	93	93	93
Time dummies	YES	YES	YES

Standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 4. Role of Policy and Institutional Factors: Quantile Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Agriculture					**Manufacturing**					**Services**				
	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90
Policy variables															
Tertiary Education [lag]	-2.205	-0.54	-0.94	-3.61	-4.805	-6.655	-3.983	-0.28	2.519	4.408	-5.874	-4.164	4.457	8.388	8.604
	[1.488]	[1.112]	[1.375]	[1.567]**	[2.470]*	[1.171]***	[1.287]***	[0.908]	[1.003]**	[1.215]***	[2.755]**	[2.499]*	[2.159]**	[2.345]***	[2.124]***
Agriculture Index [lag]	-0.312	-0.878	-1.349	-1.159	-1.366	-2.036	-1.439	1.015	1.098	1.042	-0.153	0.244	1.084	3.015	2.816
	[0.396]	[0.296]***	[0.366]***	[0.417]***	[0.658]**	[0.312]***	[0.343]***	[0.242]***	[0.267]***	[0.324]***	[0.734]	[0.666]	[0.575]*	[0.625]***	[0.566]***
Networks Index [lag]	-0.781	-2.058	-1.472	-1.591	-0.44	2.603	1.484	0.292	-1.244	-2.478	0.469	3.544	2.782	1.225	3.13
	[0.879]	[0.657]***	[0.812]*	[0.925]*	[1.458]	[0.692]***	[0.760]*	[0.536]	[0.592]**	[0.718]***	[1.627]	[1.476]**	[1.275]**	[1.385]	[1.254]**
Domestic Credit to Private [lag]	-1.015	-0.394	-0.404	0.32	0.462	0.947	0.576	-0.003	0.277	-0.835	-0.15	0.222	0.801	2.106	-0.232
	[0.575]*	[0.430]	[0.531]	[0.606]	[0.954]	[0.453]**	[0.497]	[0.351]	[0.388]	[0.470]*	[1.065]	[0.966]	[0.834]	[0.906]**	[0.821]
FDI & Non-resouce Countries [lag]	0.011	0.007	-0.001	-0.002	-0.01	0.045	0.057	0.016	0.03	0.047	-0.186	-0.106	-0.009	-0.067	-0.123
	[0.039]	[0.029]	[0.036]	[0.041]	[0.065]	[0.031]	[0.034]*	[0.024]	[0.026]	[0.032]	[0.072]**	[0.066]	[0.057]	[0.062]	[0.056]**
Trade Openness [lag]	-1.611	-2.13	-1.994	-0.851	0.352	1.927	1.765	2.067	2.564	2.192	-2.175	-3.716	-1.162	0.323	3.555
	[0.554]***	[0.414]***	[0.512]***	[0.583]	[0.919]	[0.436]***	[0.479]***	[0.338]***	[0.373]***	[0.452]***	[1.026]**	[0.930]***	[0.804]	[0.873]	[0.791]***
Other controls															
Transition Economy [Dummy]	-0.239	-1.717	-2.211	-3.52	-4.691	1.795	0.849	0.379	-0.163	0.749	-0.946	0.734	3.184	3.546	2.207
	[0.762]	[0.570]***	[0.704]***	[0.802]***	[1.265]***	[0.600]***	[0.659]	[0.465]	[0.514]	[0.622]	[1.411]	[1.280]	[1.106]***	[1.201]***	[1.088]**
Island Economy [Dummy]	5.653	2.859	3.33	3.567	3.467	-6.097	-5.374	-1.821	-0.201	-1.224	-6.361	-8.315	1.411	5.115	8.349
	[0.909]***	[0.679]***	[0.840]***	[0.957]***	[1.508]**	[0.715]***	[0.786]***	[0.554]***	[0.613]	[0.742]*	[1.683]***	[1.526]***	[1.318]	[1.432]***	[1.297]***
Mining Output Share	-0.011	-0.029	-0.035	-0.02	-0.022	-0.148	-0.149	-0.203	-0.188	-0.217	-0.556	-0.525	-0.563	-0.619	-0.642
	[0.016]	[0.012]**	[0.015]**	[0.017]	[0.026]	[0.012]***	[0.014]***	[0.010]***	[0.011]***	[0.013]***	[0.029]***	[0.026]***	[0.023]***	[0.025]***	[0.022]***
Land Area [log]	0.38	0.276	0.363	0.794	1.132	0.271	0.289	0.295	0.017	-0.203	-0.383	-0.432	-0.498	0.107	-0.897
	[0.155]**	[0.116]**	[0.143]**	[0.163]***	[0.257]***	[0.122]**	[0.134]**	[0.095]***	[0.105]	[0.127]	[0.287]	[0.261]*	[0.225]**	[0.245]	[0.221]***
Population [log]	-0.19	-0.684	-0.908	-1.208	-1.379	0.567	0.458	0.479	0.715	1.004	-0.512	-0.683	-0.318	-1.05	-0.076
	[0.182]	[0.136]***	[0.168]***	[0.192]***	[0.302]***	[0.143]***	[0.157]***	[0.111]***	[0.123]***	[0.149]***	[0.337]	[0.306]**	[0.264]	[0.287]***	[0.260]
Arable Land	2.784	2.133	2.738	0.065	1.933	-0.869	-0.354	-1.573	-3.381	-5.898	10.507	7.535	3.382	5.875	-2.632
	[1.433]*	[1.071]**	[1.324]**	[1.509]	[2.379]	[1.128]	[1.240]	[0.874]*	[0.966]***	[1.171]***	[2.654]***	[2.407]***	[2.080]	[2.259]***	[2.046]
Age dependency ratio - Young	-0.012	-0.032	-0.046	-0.12	-0.183	-0.091	-0.095	-0.067	-0.082	-0.067	0.17	0.125	0.181	0.192	0.214
	[0.015]	[0.011]***	[0.014]***	[0.016]***	[0.025]***	[0.012]***	[0.013]***	[0.009]***	[0.010]***	[0.012]***	[0.028]***	[0.025]***	[0.022]***	[0.024]***	[0.022]***
Age dependency ratio - Old	0.105	0.044	-0.006	-0.043	-0.266	-0.156	-0.153	-0.215	-0.201	-0.263	0.562	0.293	0.23	0.176	0.262
	[0.050]**	[0.037]	[0.046]	[0.053]	[0.083]***	[0.039]***	[0.043]***	[0.030]***	[0.034]***	[0.041]***	[0.093]***	[0.084]***	[0.073]***	[0.079]**	[0.071]***
GDPPC [log]	-30.668	-27.818	-32.485	-35.857	-38.49	10.836	12.065	11.163	11.756	9.858	-1.103	0.243	3.454	7.351	7.604
	[1.488]***	[1.112]***	[1.375]***	[1.567]***	[2.470]***	[1.171]***	[1.287]***	[0.908]***	[1.003]***	[1.215]***	[2.756]	[2.499]	[2.159]	[2.346]***	[2.124]***
Square of (GDPPC [log])	1.485	1.264	1.505	1.572	1.649	-0.601	-0.688	-0.625	-0.714	-0.574	0.498	0.394	0.176	-0.08	-0.058
	[0.098]***	[0.074]***	[0.091]***	[0.104]***	[0.163]***	[0.077]***	[0.085]***	[0.060]***	[0.066]***	[0.080]***	[0.182]***	[0.165]**	[0.143]	[0.155]	[0.140]
Constant	148.084	153.591	181.747	211.115	233.965	-40.702	-40.069	-36.995	-34.768	-27.335	19.073	28.578	11.591	1.855	-1.235
	[6.554]***	[4.900]***	[6.058]***	[6.903]***	[10.879]***	[5.159]***	[5.669]***	[3.999]***	[4.420]***	[5.354]***	[12.139]	[11.010]***	[9.512]	[10.332]	[9.358]
Observations	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684	1,684
(pseudo) R-square	0.526	0.603	0.679	0.713	0.699	0.418	0.384	0.316	0.277	0.321	0.507	0.511	0.498	0.501	0.517
Number of countries	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 5. Drivers of Diversification over Different Time Horizons: Quantile Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
			Agriculture					**Manufacturing**					**Services**		
	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90
Pre-1992															
Tertiary Education [lag]	-2.883	0.051	-6.921	-15.202	-21.622	-8.304	-10.174	-5.153	-0.059	4.696	-6.606	6.381	10.686	17.078	23.005
	[0.168]	[0.983]	[0.002]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.004]***	[0.981]	[0.024]**	[0.132]	[0.154]	[0.003]***	[0.000]***	[0.000]***
Agriculture Index [lag]	-3.661	-2.019	-1.676	-1.985	-2.885	-1.328	-0.784	2.312	2.846	2.402	-2.388	-2.887	0.644	2.074	3.078
	[0.000]***	[0.000]***	[0.000]***	[0.006]***	[0.002]***	[0.001]***	[0.121]	[0.000]***	[0.000]***	[0.000]***	[0.007]***	[0.001]***	[0.377]	[0.007]***	[0.000]***
Networks Index [lag]	-3.938	-2.377	2.419	6.838	11.29	-3.962	-3.024	-2.334	-0.459	-0.926	3.049	8.602	13.713	2.982	-1.053
	[0.025]**	[0.243]	[0.189]	[0.023]**	[0.004]***	[0.020]**	[0.151]	[0.115]	[0.826]	[0.596]	[0.407]	[0.022]**	[0.000]***	[0.355]	[0.735]
Domestic Credit to Private [lag]	0.029	-0.217	-0.649	-0.975	-3.422	0.731	-0.163	-0.543	-0.031	-0.23	-1.655	-0.316	-0.319	3.195	2.673
	[0.968]	[0.798]	[0.396]	[0.433]	[0.034]**	[0.301]	[0.852]	[0.376]	[0.971]	[0.751]	[0.278]	[0.839]	[0.800]	[0.017]**	[0.038]**
FDI & Non-resouce Countries [lag]	0.108	0.041	0.012	0.239	0.265	0.15	0.095	0.091	0.097	0.143	-0.036	-0.361	-0.296	-0.571	-0.494
	[0.247]	[0.705]	[0.905]	[0.132]	[0.196]	[0.097]*	[0.394]	[0.244]	[0.381]	[0.122]	[0.854]	[0.070]*	[0.065]*	[0.001]***	[0.003]***
Trade Openness [lag]	-0.611	-1.74	-0.003	0.958	2.509	0.645	0.098	-1.158	-1.731	-3.169	2.606	1.843	0.946	3.091	3.422
	[0.282]	[0.008]***	[0.996]	[0.323]	[0.046]**	[0.241]	[0.886]	[0.016]**	[0.011]**	[0.000]***	[0.029]**	[0.129]	[0.334]	[0.003]***	[0.001]***
Observations	951	951	951	951	951	951	951	951	951	951	951	951	951	951	951
(pseudo) R-square	0.559	0.618	0.681	0.693	0.688	0.464	0.4	0.338	0.281	0.338	0.496	0.495	0.502	0.539	0.602
Number of countries	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Post-1992															
Tertiary Education [lag]	-0.221	1.361	1.035	0.034	-1.886	-3.477	-0.633	0.943	1.448	3.143	-5.386	-4.466	-3.008	-0.866	1.402
	[0.912]	[0.331]	[0.474]	[0.990]	[0.274]	[0.013]**	[0.659]	[0.422]	[0.089]*	[0.024]**	[0.122]	[0.087]*	[0.101]	[0.763]	[0.713]
Agriculture Index [lag]	0.105	-0.849	-0.898	-2.845	-1.511	-1.595	-0.147	0.907	0.693	0.697	1.759	2.6	2.268	1.855	1.251
	[0.867]	[0.053]*	[0.047]**	[0.001]***	[0.005]***	[0.000]***	[0.742]	[0.014]**	[0.009]***	[0.108]	[0.106]	[0.001]***	[0.000]***	[0.039]**	[0.294]
Networks Index [lag]	-1.568	-1.8	-1.65	-1.206	-1.21	3.087	2.135	0.346	-0.163	-1.605	-0.101	2.744	2.884	0.622	-2
	[0.118]	[0.011]**	[0.024]**	[0.383]	[0.163]	[0.000]***	[0.003]***	[0.558]	[0.703]	[0.022]**	[0.954]	[0.037]**	[0.002]***	[0.666]	[0.297]
Domestic Credit to Private [lag]	-0.52	-0.358	-0.645	-1.63	-0.12	0.568	-0.36	-0.12	-0.372	-0.979	1.712	1.281	1.891	3.151	0.182
	[0.500]	[0.509]	[0.248]	[0.125]	[0.857]	[0.293]	[0.515]	[0.792]	[0.257]	[0.068]*	[0.203]	[0.204]	[0.008]***	[0.005]***	[0.902]
FDI & Non-resouce Countries [lag]	0.023	0.001	-0.005	-0.036	-0.022	0.029	0.011	-0.026	0.014	0.053	-0.086	0.039	0.09	0.019	-0.078
	[0.589]	[0.970]	[0.868]	[0.548]	[0.549]	[0.348]	[0.713]	[0.302]	[0.461]	[0.077]*	[0.256]	[0.495]	[0.024]**	[0.766]	[0.345]
Trade Openness [lag]	-3.307	-1.413	-1.103	1.012	0.622	3.966	3.64	5.261	4.307	3.487	-5.676	-8.421	-9.88	-5.443	1.881
	[0.000]***	[0.027]**	[0.095]*	[0.418]	[0.428]	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.279]
Observations	733	733	733	733	733	733	733	733	733	733	733	733	733	733	733
(pseudo) R-square	0.539	0.624	0.712	0.774	0.8	0.482	0.474	0.433	0.435	0.452	0.577	0.579	0.552	0.494	0.449
Number of countries	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 6. Role of Country Fundamentals (EMEs and LICs): Quantile Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Agriculture					**Manufacturing**					**Services**				
	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90
Transition Economy [Dummy]	0.728	0.105	-0.658	-1.072	0.52	-0.575	0.366	0.745	1.727	1.871	-6.212	-4.235	-1.027	-0.11	0.9
	[0.012]**	[0.676]	[0.219]	[0.018]**	[0.327]	[0.176]	[0.205]	[0.004]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.042]**	[0.831]	[0.196]
Island Economy [Dummy]	1.585	0.762	0.409	-0.203	-2.252	-3.177	-4.031	-5.45	-5.05	-3.357	7.326	9.385	10.134	8.12	9.041
	[0.000]***	[0.001]***	[0.383]	[0.603]	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Mining Output Share	-0.044	-0.043	-0.048	-0.048	-0.057	-0.148	-0.175	-0.193	-0.185	-0.189	-0.506	-0.504	-0.522	-0.573	-0.628
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Land Area [Log]	0.538	0.554	0.667	1.297	1.289	0.227	-0.154	-0.377	-0.731	-1.215	0.664	-0.202	-0.145	0.041	-0.584
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.001]***	[0.008]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.056]*	[0.138]	[0.685]	[0.000]***
Population [log]	-0.471	-0.754	-1.233	-2.618	-3.242	0.574	1.083	1.094	1.419	1.944	-0.23	0.722	-0.062	-1.349	-0.882
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.407]	[0.000]***	[0.618]	[0.000]***	[0.000]***
Arable Land	6.792	3.562	4.183	6.329	3.75	3.861	-1.376	-0.952	-2.795	-7.089	9.572	-2.019	-3.66	-1.573	-8.664
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.001]***	[0.000]***	[0.020]**	[0.076]*	[0.000]***	[0.000]***	[0.000]***	[0.079]*	[0.001]***	[0.161]	[0.000]***
Age dependency ratio - Young	-0.033	-0.029	-0.024	-0.078	-0.062	-0.055	-0.039	-0.032	-0.039	-0.054	0.172	0.129	0.127	0.091	0.128
	[0.000]***	[0.000]***	[0.028]**	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Age dependency ratio - Old	-0.164	-0.073	-0.068	-0.381	-0.509	0.014	0.006	-0.093	-0.138	-0.159	0.626	0.618	0.446	0.15	0.154
	[0.000]***	[0.000]***	[0.093]*	[0.000]***	[0.000]***	[0.659]	[0.801]	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.004]***
GDPPC [log]	-28.199	-30.971	-38.009	-38.758	-40.478	9.248	9.315	10.077	9.014	4.54	25.763	15.788	11.379	9.441	10.227
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Square of (GDPPC [log])	1.359	1.457	1.787	1.724	1.767	-0.495	-0.471	-0.501	-0.452	-0.179	-1.202	-0.619	-0.375	-0.272	-0.294
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.002]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.003]***
Constant	140.93	161.685	202.512	235.781	260.714	-38.317	-40.954	-39.248	-32.377	-12.873	-103.353	-58.108	-20.796	14.769	13.929
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.031]**
Observations	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491	4,491
(pseudo) R-square	0.426	0.513	0.572	0.601	0.611	0.294	0.368	0.401	0.349	0.298	0.388	0.412	0.408	0.42	0.464
Number of countries	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 7. Alternative Independent Variables: Quantile Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Agriculture					**Manufacturing**					**Services**				
	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile 90	Quantile 10	Quantile 25	Quantile 50	Quantile 75	Quantile
Secondary Education [lag]	-0.03	-0.009	-0.01	0.003	-0.036	-0.005	-0.02	-0.048	-0.028	0.005	-0.006	0.019	0.077	0.105	0.103
	[0.000]***	[0.025]**	[0.097]*	[0.513]	[0.000]***	[0.011]	[0.006]***	[0.007]***	[0.009]***	[0.012]	[0.025]	[0.012]	[0.014]***	[0.015]***	[0.023]**
Agriculture Index [lag]	-0.743	-0.765	-0.516	-0.007	-0.802	-1.148	-0.785	0.626	2.113	1.921	-2.163	-3.525	-0.098	1.734	3.419
	[0.004]***	[0.000]***	[0.049]**	[0.968]	[0.001]***	[0.461]**	[0.252]***	[0.320]*	[0.365]***	[0.527]***	[1.070]**	[0.514]***	[0.583]	[0.640]***	[0.993]**
Networks Index [lag]	0.036	-0.509	-1.494	-1.468	-1.167	0.749	1.677	0.232	-0.335	-0.74	1.086	2.281	-0.389	-0.218	-1.982
	[0.932]	[0.079]*	[0.002]***	[0.000]***	[0.054]*	[0.864]	[0.471]***	[0.599]	[0.685]	[0.987]	[2.005]	[0.963]**	[1.092]	[1.199]	[1.860]
Financial Reform Index [lag]	-3.135	-2.941	-0.618	-0.076	-0.208	0.46	-3.294	-3.285	-5.491	-6.854	9.852	13.1	10.163	11.222	4.199
	[0.000]***	[0.000]***	[0.369]	[0.868]	[0.749]	[1.208]	[0.659]***	[0.838]***	[0.957]***	[1.380]***	[2.801]***	[1.346]***	[1.526]***	[1.676]***	[2.599]
Capital Account Openness [lag]	0.173	0.126	0.026	0.043	0.356	0.136	0.435	0.382	0.241	0.205	-0.54	-0.962	-1.274	-1.381	-0.532
	[0.059]*	[0.013]**	[0.758]	[0.450]	[0.000]***	[0.150]	[0.082]***	[0.104]***	[0.119]**	[0.171]	[0.348]	[0.167]***	[0.190]***	[0.208]***	[0.323]*
Trade Index [lag]	1.886	0.307	2.716	3.09	3.368	-3.233	-4.457	-1.575	0.205	0.849	0	1.617	2.423	3.489	5.545
	[0.000]***	[0.280]	[0.000]***	[0.000]***	[0.000]***	[0.876]***	[0.478]***	[0.608]***	[0.694]	[1.001]	[2.033]	[0.977]*	[1.108]**	[1.216]***	[1.887]**
Observations	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261	1,261
(pseudo) R-square	0.536	0.61	0.693	0.754	0.759	0.423	0.336	0.253	0.232	0.285	0.52	0.533	0.533	0.531	0.517
Number of countries	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

All regressions include the full set of controls and a constant term. Standard errors in parenthesis. Significance levels: *** 0.01, ** 0.5, * 0.1.

Table 8.1 Additional Controls-Agriculture: Quantile Regressions

Capital stock

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Capital stock [lag]	-0.956	-1.18	-0.837	-1.486	-3.315
	[0.380]**	[0.271]***	[0.312]***	[0.431]***	[0.543]***
Observations	1,514	1,514	1,514	1,514	1,514
(pseudo) R-square	0.54	0.615	0.681	0.702	0.688
Number of countries	80	80	80	80	80
Time dummies	YES	YES	YES	YES	YES

Quality of political institutions

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Polity Index	0.012	0.028	0.028	0.013	0.026
	[0.013]	[0.009]***	[0.012]**	[0.015]	[0.023]
Observations	1,620	1,620	1,620	1,620	1,620
(pseudo) R-square	0.532	0.61	0.686	0.712	0.696
Number of countries	87	87	87	87	87
Time dummies	YES	YES	YES	YES	YES

Labor regulation index

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
PC Labor	-0.131	0.061	0.264	0.125	0.18
	[0.155]	[0.103]	[0.113]**	[0.157]	[0.176]
Observations	500	500	500	500	500
(pseudo) R-square	0.462	0.541	0.644	0.736	0.806
Number of countries	41	41	41	41	41
Time dummies	YES	YES	YES	YES	YES

Index of economic globalization

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Economic Globalization	-0.039	-0.048	-0.056	-0.017	0.009
	[0.015]**	[0.011]***	[0.013]***	[0.015]	[0.029]
Observations	1,648	1,648	1,648	1,648	1,648
(pseudo) R-square	0.533	0.61	0.684	0.715	0.7
Number of countries	89	89	89	89	89
Time dummies	YES	YES	YES	YES	YES

Exchnge rate

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
REER [log]	-0.438	1.307	1.74	1.16	0.471
	[0.511]	[0.273]***	[0.390]***	[0.572]**	[0.611]
Observations	906	906	906	906	906
(pseudo) R-square	0.512	0.597	0.691	0.754	0.791
Number of countries	61	61	61	61	61
Time dummies	YES	YES	YES	YES	YES

Total factor productivity

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
TFP [lag]	-0.017	-0.02	-0.028	-0.079	-0.037
	[0.036]	[0.035]	[0.029]	[0.048]	[0.045]
Observations	678	678	678	678	678
(pseudo) R-square	0.553	0.627	0.718	0.78	0.816
Number of countries	78	78	78	78	78
Time dummies	YES	YES	YES	YES	YES

All regressions include the full set of controls reported in Table 4 and a constant term. Robust standard errors in parenthesis. Significance level: *** 0.01, ** 0.5, * 0.1.

Table 8.2 Additional Controls-Manufacturing: Quantile Regressions

Capital stock

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Capital stock [lag]	2.123	2.194	1.822	1.106	0.252
	[0.246]***	[0.262]***	[0.239]***	[0.246]***	[0.344]
Observations	1,514	1,514	1,514	1,514	1,514
(pseudo) R-square	0.455	0.443	0.376	0.323	0.345
Number of countries	80	80	80	80	80
Time dummies	YES	YES	YES	YES	YES

Quality of political institutions

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Polity Index	-0.007	-0.021	-0.025	-0.064	-0.037
	[0.009]	[0.011]*	[0.008]***	[0.009]***	[0.013]***
Observations	1,620	1,620	1,620	1,620	1,620
(pseudo) R-square	0.422	0.393	0.333	0.301	0.332
Number of countries	87	87	87	87	87
Time dummies	YES	YES	YES	YES	YES

Labor regulation index

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
PC Labor	-0.422	-0.701	-0.699	-0.376	-0.283
	[0.202]**	[0.139]***	[0.171]***	[0.139]***	[0.169]*
Observations	500	500	500	500	500
(pseudo) R-square	0.394	0.347	0.328	0.408	0.513
Number of countries	41	41	41	41	41
Time dummies	YES	YES	YES	YES	YES

Index of economic globalization

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Economic Globalization	0.055	0.061	0.01	-0.001	-0.016
	[0.012]***	[0.011]***	[0.009]	[0.011]	[0.013]
Observations	1,648	1,648	1,648	1,648	1,648
(pseudo) R-square	0.431	0.38	0.303	0.27	0.318
Number of countries	89	89	89	89	89
Time dummies	YES	YES	YES	YES	YES

Exchnge rate

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
REER [log]	-1.195	-0.517	0.413	0.479	1.007
	[0.527]**	[0.354]	[0.493]	[0.374]	[0.377]***
Observations	906	906	906	906	906
(pseudo) R-square	0.456	0.405	0.289	0.252	0.312
Number of countries	61	61	61	61	61
Time dummies	YES	YES	YES	YES	YES

Total factor productivity

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
TFP [lag]	-0.007	0.037	-0.005	0.022	0.015
	[0.047]	[0.037]	[0.032]	[0.031]	[0.029]
Observations	678	678	678	678	678
(pseudo) R-square	0.515	0.456	0.409	0.407	0.463
Number of countries	78	78	78	78	78
Time dummies	YES	YES	YES	YES	YES

All regressions include the full set of controls reported in Table 4 and a constant term. Robust standard errors in parenthesis. Significance level: *** 0.01, ** 0.5, * 0.1.

Table 8.3 Additional Controls- Services: Quantile Regressions

Capital stock

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Capital stock [lag]	-3.549	-3.327	-2.07	-0.765	-0.903
	[0.525]***	[0.519]***	[0.401]***	[0.459]*	[0.510]*
Constant	-51.591	-68.581	-34.691	-13.129	-33.799
	[17.439]***	[17.250]***	[13.341]***	[15.254]	[16.970]**
Observations	1,514	1,514	1,514	1,514	1,514
(pseudo) R-square	0.524	0.533	0.528	0.537	0.551
Number of countries	80	80	80	80	80
Time dummies	YES	YES	YES	YES	YES

Quality of political institutions

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Polity Index	0.019	0.016	-0.013	-0.017	0.007
	[0.026]	[0.020]	[0.017]	[0.017]	[0.019]
Constant	22.511	31.718	23.279	-0.379	-9.464
	[13.577]*	[10.520]***	[8.696]***	[8.778]	[9.969]
Observations	1,620	1,620	1,620	1,620	1,620
(pseudo) R-square	0.512	0.527	0.517	0.513	0.508
Number of countries	87	87	87	87	87
Time dummies	YES	YES	YES	YES	YES

Labor regulation index

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
PC Labor	-0.756	0.36	1.689	1.246	0.654
	[0.370]**	[0.353]	[0.331]***	[0.345]***	[0.313]**
Constant	-54.478	-52.094	-75.48	-51.08	-71.643
	[33.727]	[32.230]	[30.213]**	[31.411]	[28.577]**
Observations	500	500	500	500	500
(pseudo) R-square	0.679	0.611	0.561	0.551	0.561
Number of countries	41	41	41	41	41
Time dummies	YES	YES	YES	YES	YES

Index of economic globalization

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
Economic Globalization	0.049	0.056	0.087	0.067	0.047
	[0.030]	[0.024]**	[0.018]***	[0.023]***	[0.023]**
Constant	20.95	35.744	28.665	-9.755	-18.89
	[13.297]	[10.509]***	[8.071]***	[10.181]	[10.200]*
Observations	1,648	1,648	1,648	1,648	1,648
(pseudo) R-square	0.51	0.512	0.503	0.501	0.523
Number of countries	89	89	89	89	89
Time dummies	YES	YES	YES	YES	YES

Exchnge rate

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
REER [log]	-1.664	-2.279	-0.387	1.397	1.988
	[1.026]	[0.844]***	[0.929]	[0.827]*	[0.919]**
Constant	42.569	67.589	29.813	-4.52	-30.461
	[24.283]*	[19.985]***	[21.988]	[19.574]	[21.747]
Observations	906	906	906	906	906
(pseudo) R-square	0.603	0.599	0.562	0.537	0.548
Number of countries	61	61	61	61	61
Time dummies	YES	YES	YES	YES	YES

Total factor productivity

	Qntl 10	Qntl 25	Qntl 50	Qntl 75	Qntl 90
TFP [lag]	-0.063	0.014	-0.061	0.029	-0.104
	[0.073]	[0.078]	[0.064]	[0.085]	[0.117]
Constant	58.946	45.488	15.313	-10.63	-30.065
	[19.337]***	[20.637]**	[16.778]	[22.356]	[30.753]
Observations	678	678	678	678	678
(pseudo) R-square	0.628	0.595	0.549	0.486	0.441
Number of countries	78	78	78	78	78
Time dummies	YES	YES	YES	YES	YES

All regressions include the full set of controls reported in Table 4 and a constant term. Robust standard errors in parenthesis. Significance level: *** 0.01, ** 0.5, * 0.1.

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Appendix I: List of Countries in the Sample

Advanced	Emerging		LICs	
United States of America *	Albania	Philippines *	Afghanistan	Lesotho
United Kingdom *	Algeria	Poland *	Armenia *	Liberia
Austria *	Angola	Qatar	Bangladesh *	Madagascar *
Belgium *	Argentina *	Romania	Benin *	Malawi *
Denmark *	Azerbaijan *	Russia	Bhutan	Maldives
France *	Bahamas *	Saudi Arabia *	Bolivia *	Mali
Germany *	Bahrain	Serbia	Burkina Faso *	Moldova *
Italy *	Barbados	South Africa *	Burundi	Mongolia *
Luxembourg	Belarus *	Sri Lanka *	Cambodia	Mozambique *
Netherlands *	Belize *	Suriname	Cameroon *	Myanmar
Norway *	Bosnia and Herzegovina	Swaziland	Cape Verde	Nepal *
Sweden *	Botswana	Syria	Central African Republic *	Nicaragua
Switzerland *	Brazil *	Thailand *	Chad *	Niger
Canada *	Brunei	Trinidad *	Comoros	Nigeria *
Japan *	Bulgaria *	Tunisia *	Congo, DR - Zaire	Papua New Guinea
Finland *	Chile *	Turkey *	Congo, Rep.	Rwanda
Greece *	China	Turkmenistan	Djibouti	Saint Lucia *
Iceland *	Colombia *	Ukraine *	Eritrea	Saint Vincent and the Grenadines *
Ireland *	Costa Rica	United Arab Emirates	Ethiopia *	Senegal
Malta	Croatia	Uruguay *	Gambia *	Sierra Leone *
Portugal *	Dominican Republic	Venezuela *	Georgia *	Solomon Islands
Spain *	Ecuador *	Zimbabwe	Ghana *	Sudan
Australia *	Egypt *		Grenada	Tajikistan
New Zealand *	El Salvador		Guinea	Tanzania *
Cyprus	Equatorial Guinea		Guinea-Bissau	Togo *
Israel	Fiji		Guyana *	Tonga
Singapore	Gabon		Haiti	Uganda *
Czech Republic *	Guatemala *		Honduras *	Uzbekistan
Slovakia *	Hungary *		Kenya *	Vanuatu
Estonia	India *		Kyrgyz Republic *	Western Samoa
Slovenia	Indonesia *		Laos	Zambia *
	Iran			
	Iraq			
	Jamaica *			
	Jordan *			
	Kazakhstan			
	Korea *			
	Kuwait			
	Latvia *			
	Libya			
	Lithuania *			
	Macedonia			
	Malaysia *			
	Mauritius			
	Mexico *			
	Montenegro			
	Morocco *			
	Namibia *			
	Oman *			
	Pakistan *			
	Panama			
	Paraguay			
	Peru *			

Note: LICs: IMF PRGT-eligible countries. Advanced and Emerging: IMF World Economic Outlook classification
Countries with a star are included in the OLS and Quantile augmented regressions (Table 3 and 4)

Appendix II: Data Description

Dependent Variables	Description	Source
Agriculture, manufacturing, services	The real value added share of agriculture, manufacturing and services sectors in total value added, constructed from the real value added by economic activity series.	UN data
Structural Variables		
Transition [D]	Binary variable equals to 1 if the country is transition economy	
Island [D]	Binary variable equals to 1 if the country is island economy with population less than 1 million	
Mining, % of total value added	Sectoral real value added share of mining, in percent	UNdata
Land Area [log]	Natural log of land area, in sq km	World Bank: World Development Indicators
Population [log]	Natural log of total population	World Bank: World Development Indicators
Arable land, % of total	Percentage of arable land of total land area, in percent	World Bank: World Development Indicators
Age dependency ratio - Young	Age dependency ratio, young, as a percentage of working-age population	World Bank: World Development Indicators
Age dependency ratio - Old	Age dependency ratio, old as a percentage of working-age population	World Bank: World Development Indicators
GDPPC [log]	Natural log of GDP per capita, in constant PPP U.S. dollar	IMF: World Economic Outlook
Square of (GDPPC, [log])	Square term of the natural log of GDP per capita, in constant PPP U.S. dollar	IMF: World Economic Outlook

Policy Variables	Description	Source
Tertiary Education	Total enrollment in tertiary ducation, regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.	World Bank: World Development Indicators
Agriculture Index	The index captures intervention in the market for the main agricultural export commodity in each country. The index can take four values: 1) zero - public monopoly or monopsony in production, transportation, or marketing; 2) 1/3 - administered prices; 3) 2/3 - public ownership of relevant producers or concession requirements; 4) 1 - no public intervention. All values are normalized to lie between 0 to 1.	IMF: Giuliano, Mishra and Spilimbergo (2010)
Network Index	This index is constructed by summing the two underlying indicators, electricity and telecommunication provisions and rescaling between 0 to 1. The electricity indicators caputre 1) the degree of unbundling of generation, transmission, and distribution; 2) whether a regulator other than government has been established; 3) whether the wholesale market has been liberalized; 4) privatization. The telecommunication indicator captures 1) the degree of competition in local services; 2) whether a regulator other than government has been established; 3) the degree of liberalization of interconnection changes; 4) privatization.	IMF: Giuliano, Mishra and Spilimbergo (2010)
Domestic Credit	Domestic credit to private banks and other financial institutions as a share of GDP, in percent	World Bank: World Development Indicators
Trade Openness	Total real trade (exports plus imports) as a share of real GDP (2000 constant price), in percent	Penn World Table 7.2
FDI	Foreign direct investment (inflow) as a share of GDP	World Bank: World Development Indicators

Appendix II (continued)

Policy Variables (contd.)	Description	Source
Financial reform index	The index measures financial liberalization, constructed from 8 underlying dimensions: 1) credit controls and reserve requirements; 2) aggregate credit ceilings; 3) interest rate liberalization; 4) banking sector entry; 5) capital account transactions; 6) privatization; 7) securities market; 8) banking sector supervision. The index is normalized between 0 to 1, higher value indicating more financial liberalization.	Abiad, Detragiache and Tressel (2008)
Capital account openness	The index measures a country's degree of capital accont openness, based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictiions (AREAER).	Chinn and Ito (2011)
Labor regulation index	Index constructed using principal components analysis on four labor market flexibility indicators : labor tax wedge, the ratio of minimum to mean wage, unemployment benefits coverage, and severance pay after 9 months.	Aleksynska and Schindler (2011).
Polity index	Constraint on the executive. Values ranges from 1 (denoting no regulations on the executive's power) to 7 (denoting countries where political bodies, such as legislatures, have equal or even larger authority than the executive)	Polity IV
Capital stock	Natural log of real capital stock constructed using perpetual inventory method.	Gupta et al (2011)
Trade liberalization index	Average tariff rates, with missing values extrapolated using implicit weighted tariff rates. Index normalized to be between zero and unity: zero means the tariff rates are 60 percent or higher, while unity means the tariff rates are zero.	Pratti et al. (2013)
Index of economic globalization	The index is the economic dimension of the KOF globalization index, constructed on actual economic flows and proxies for restrictions to trade and capital. The index lie between 1 to 100, higher values indicating higher degree of economic globalization.	Dreher et al (2008)
REER	Real effective exchange rate (2005=100)	IMF: International Financial Statistics