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Developing the Services Sector as Engine of Growth for Asia: An Overview

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Abstract

The maturing of the manufacturing sector in many Asian countries, combined with the relative backwardness of its services sector, has made services sector development a top priority for developing Asia. Our central objective is to broadly survey and analyze the current landscape of the region's services sector so as to assess its potential to serve as an engine for inclusive economic growth. Our analysis indicates that services are already an important source of output, growth, and jobs in the region. However, its productivity greatly lags that of the advanced economies, which implies ample room for further growth. The impact of services sector on poverty reduction is less clear but we do find some limited evidence of a poverty reduction effect. One key challenge for all Asian countries is to improve the quality of services sector data. Overall, while services sector development is a long and challenging process, creating more competitive services markets by removing a wide range of internal and external policy distortions is vital for improving services sector productivity. As important as such policy reforms are, complementary investments in physical infrastructure and human capital will also be necessary to achieve a strong services sector.

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INTRODUCTION: WHY DOES DEVELOPING ASIA NEED TO STRENGTHEN ITS SERVICES SECTOR?

An integral part of the economic growth and development process is structural transformation. The structure of output and employment changes as a country grows and develops. A well-known stylized fact is that the share of agriculture in output and employment falls and the share of manufacturing and services correspondingly rises during the industrialization process. Beyond a certain point, as the manufacturing sector matures, productivity growth in manufacturing offsets employment growth, and the employment share of services continues to increase while the employment share of manufacturing begins to decline. In some highly open countries in East and Southeast Asia, comparative advantage is strongly concentrated in manufacturing, and the manufacturing share of output itself may peak and decline as the economy eventually rebalances in response to rising income and domestic demand, which has a larger services component, increases in importance. In many Asian countries, especially in East and Southeast Asia, the industrialization process has gone on for quite some time. In those countries, the scope for further growth of the manufacturing sector is increasingly limited.

While export-oriented industrialization has transformed East and Southeast Asia into the factory of the world, the region's record in the services sector has been much less impressive. Asia does have some well-known success stories, such as India's emergence as the world's leading information and communications technology-business process outsourcing (ICT-BPO) exporter (see, for example, Dossani 2010). The Philippines is also emerging as a major ICT-BPO hub. However, even in those countries, some tradable services industries rather than the entire services sector are performing well. Overall, there is a general perception that in Asia the productivity of a weak services sector lags a strong, internationally competitive manufacturing sector. And in some cases, where there are strong service sectors, there are concerns that they are effectively enclaves with weak backwards and forwards linkages to the rest of the economy. This matters considerably for economic growth since low productivity growth in the services sector can retard economy-wide productivity growth. The growing tradability of services and consequent emergence of global supply chains in services, for example in health care, presents new growth opportunities for a region which is heavily involved in the global supply chain in manufacturing.

There are a number of inter-related factors which further strengthen the case for a more vibrant Asian services sector at this point in time. For one, while Asia has grown faster than the rest of the world for decades, the global financial and economic crisis of 2008–09 has cast a dark cloud over its future growth prospects. The crisis originated in the advanced economies and hit those economies harder than the developing countries. As a result, the post-crisis recovery has been noticeably weaker in the advanced economies. Furthermore, in the euro area, recovery has been dealt another big blow by the ongoing sovereign debt crisis. The bottom line is that advanced economies are likely to experience a slowdown relative to the pre-global crisis period. This has significant adverse ramifications for Asia's export and

growth prospects since advanced economies still take in a large share of Asia's manufactured exports even though their share has been declining. At a time when the manufactured exports engine is stalling, igniting the services engine can help offset the loss of growth momentum.

Therefore, the global financial crisis has increased the urgency of the rebalancing effort (see, for example, ADB 2009). The global crisis and its pronounced effect on Asia's exports and growth shattered any notion that Asia had decoupled from the business cycle of the advanced economies. More fundamentally, it highlighted the risks of disproportionate dependence on exports and a corresponding need to strengthen domestic demand. As a result of strong sustained growth, millions of Chinese, Indians, Indonesians, and other Asians are joining the ranks of the middle class every year. This implies considerable potential growth for private consumption and domestic demand. Relative to manufactured goods, services tend to be less tradable and more geared toward domestic demand.[1]Developing the services sector goes hand in hand with strengthening domestic demand, especially since services account for much of private consumption. Services sector development is thus the supply side of the rebalancing equation. From a global perspective, advanced economies have a comparative advantage in modern services such as business services. Liberalizing imports of such services can thus contribute not only to the competitiveness of Asian economies but also to global rebalancing,

A dynamic services sector can also contribute to Asia's quest for inclusive growth which includes broader swathes of the population in the growth process and spreads the fruits of growth more widely. Education and employment are especially important in reducing inequality (see, for example, ADB 2012). In the past, export-oriented industrialization gave Asia the best of both worlds—lots of jobs and fast growth. Going forward, however, Asia will find it more challenging to achieve high growth and high employment. While demographic transition toward older populations is already under way in Asia, for the most part Asia is still a relatively young continent. Hundreds of millions of young job-seeking Asians are joining the workforce every year. Furthermore, as noted, the manufacturing sector is maturing in many parts of Asia so its capacity to create jobs will become more limited. Relative to manufacturing, services tend to be labor intensive. Therefore, services sector growth can make a big contribution to employment and thus inclusive growth.

HETEROGENEITY OF SERVICES SECTOR AND MEASUREMENT PROBLEMS

Compared to agriculture, mining, and most of all, manufacturing, the service sector has long occupied a diminished place in both the public imagination and economic research. One reason is the sheer diversity of the sector, encompassing an enormous range of industries and activities which discourages simple

1. It is true that technological progress, for example in information and communications technology (ICT), is making services more tradable, but overall services remain less tradable than goods.

mental imagery or easy encapsulation (see table 1).[2] In the case of Asia, the intrinsic heterogeneity of the services sector is compounded by the enormous heterogeneity across countries. Asian countries are at very different stages in the development level of their service sector as well as overall economy. Not surprisingly, this heterogeneity has far-reaching policy implications—policy solutions for fostering the services sector must necessarily be country-specific and industry-specific. Heterogeneity also entails profound analytical implications, as explained below.

Eichengreen and Gupta (2009) argue that the broad aggregation of services obscures two distinct "waves" of service sector growth, the first occurring in "traditional" services sectors (such as personal services) early in the development process at relatively low levels of income and the second occurring later in the development process at higher incomes in activities such as communication, computer, technical, and business services) that are more intensive in the use of information technology and possess greater scope for cross-border tradability. For some purposes, it may be useful to focus on a more limited subset of service activities such as business services where the prospects for high-wage employment and cross-border trade appear relatively high, and political sensitivities may be less acute than in sectors such as education or health. These possibilities may not be inconsiderable: Jensen (2011) points out that in the United States, in 1960 business services employed less than half as many workers compared to manufacturing, but by 2007, business services employment was more than double manufacturing.

The analytical challenges created by the sector's diversity are compounded by basic problems of measurement. The output of many service sectors is hard to measure (public education, for example). In many countries, many service sector activities are highly regulated, insulated from competition, and subject to administered or otherwise regulated prices (again, think public education). If neither outputs nor quantities are amenable to measurement, it goes without saying that the assessment of productivity and productivity change is difficult. Needless to say, these conditions stand in stark contrast to those prevailing in agriculture, mining, and manufacturing, where output is subject to greater standardization and enormous attention has been devoted to understanding the determinants of productivity. These analytical challenges are even further compounded at the level of the firm, where many of today's major multinational corporations with their origins in manufacturing such as GM or GE have large service sector divisions. Indeed part of the apparent intensification of service sector activity may reflect the changing nature of the firm, specifically outsourcing and off-shoring, with the latter also affecting the measurement of productivity in service-using sectors such as manufacturing (Yuskavage, Strassner, and Medieros 2008; Houseman et al 2011).

2. Furthermore, the definition of services is not always clear cut. For example, potable water, electricity, and other public utilities are defined to be part of industry rather than services. In many Asian countries, a critical issue in economic development is the lack of access to public utilities.

These cross-sectoral connections are key: After surveying numerous studies Francois and Hoekman (2010) conclude that service sector performance may be a major factor in productivity growth economy-wide, and that service sector policy in both its domestic and cross-border manifestations may be a key driver in economic development.

SERVICES SECTOR DEVELOPMENT AND PER CAPITA INCOME: SOME KEY STYLIZED FACTS

Economists have a troubling tendency to look for lost keys under the lamppost and these analytical challenges may have contributed to the under-study of the services sector relative to others. If this under-emphasis was ever justified, the growth of the service sector relative to other parts of the economy makes it untenable today. Services output is positively correlated with per capita income and employment shares cross-sectionally at the global level as shown in figure 1 and figure 2 respectively. Services output is also correlated with educational attainment (figure 3).

Eichengreen and Gupta argue that the service sector of output rises at a decelerating rate until it levels out at around $1800 per capita (2000 purchasing power adjusted dollars) and then accelerates again at about $4000 per capita before leveling off again. It also appears that the per capita income threshold for the second takeoff appears to have declined since around 1990 presumably reflecting the diffusion and increased applicability of information technology. Educational attainment is connected to the capacity to successfully adapt to the local environment innovations originating abroad. The second wave appears to be more acute in democracies, in countries near major financial sectors, and economies relatively open to trade. To this list one could presumably append educational attainment. These tendencies suggest a process in which cross-border trade and investment are an important diffusion mechanism with democracies being more open to information technology, possibly placing a greater emphasis on education, and carrying a lower foreign investment risk premium. Globally cross-border trade in services has risen steadily as a share of world income for the past quarter-century (see figure 4).

Figures 5 and 6 present data for selected Asian countries on the service sector's share of national income and employment, respectively. As is evident from these charts, the service sector has steadily increased its prominence over a 30 year period, with the sector now accounting for most of national income in countries such as Singapore, Korea, Philippines, India, and Pakistan and as well as a majority of employment in Hong Kong (China), Singapore, Korea, Malaysia, and the Philippines.

Yet while services clearly play an increasingly prominent role within many economies, in Asia, the steady expansion of cross-border trade in services is less evident. Although it is true that global services trade has risen over time, relative to national income the pattern in Asia is less clear (figure 7). This outcome may partly be due to the policy impediments to cross-border exchange such as national regulations block or impede foreign service providers from gaining a foothold in national markets.

Trade in services has been dealt with unevenly at the multilateral, regional, and bilateral levels. The General Agreement on Trade in Services (GATS) identifies four modalities: trade in services where physical interaction between the buyer and seller is unnecessary, analogous to trade in goods; consumption abroad where the consumer travels to the provider (i.e., tourism); commercial presence where the provider establishes a facility in the client's country (i.e., investment); and temporary movement of service providers to the client (i.e., migration). These different modalities involve differing issues and complicate negotiations; the process is further complicated by the fact that countries have differing comparative advantages and interests in liberalization across the range of service activities associated with differing modes of delivery.

Services trade policy restrictiveness tends to decline with per capita income (figure 8). Presumably causality runs in both directions: More open economies tend to grow faster and get rich, while for political economy reasons, rich economies with large service sectors tend not to impose restrictions on these important and politically influential industries. However, differential performance with respect to services imports and exports (figures 9 and 10, respectively) suggests that the competitiveness of Asian service providers may also be an issue.

SERVICES SECTOR IN ASIA: THE BASIC FACTS

Across the region, the services sector has clearly been on the rise, whether viewed in terms of output or employment. From about 44 percent average share in 1980, the services sector now accounts for slightly over one-half of GDP in developing Asia, but there is some variation across the subregions (figure 11).[3] In East Asia, the services sector comprises about 60 percent of GDP, and the current high share is mainly due to the newly industrializing economies (NIEs)—Hong Kong, China; Korea; and Taipei, China—with services shares of about 60 to 90 percent (figure 12). But the People's Republic of China (PRC) has also witnessed a significant rise in services, by roughly 20 percentage points over the past three decades. Compared to other subregions, the services sector has been less dynamic in Southeast Asia; only Philippines and Singapore have services shares, rising to over one-half of GDP. A uniform pattern of a rapidly growing services sector can be seen across South Asia, most notably in India, Nepal, and Sri Lanka, where services shares have risen by about 15 to 20 percentage points. In Central Asia, the surge of the services sector has been quite dramatic, as economies' newly gained independence in the 1990s

3. Developing Asia is defined as Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan Republic, Pakistan, Tajikistan, Turkmenistan, Uzbekistan, China, Hong Kong, Republic of Korea, Mongolia, Bangladesh, Bhutan, India, Maldives, Nepal, Sri Lanka, Vietnam, Thailand, Singapore, Philippines, Myanmar, Malaysia, Lao PDR, Indonesia, Cambodia, Brunei Darussalam, Fiji, Kiribati, Marshall Islands, Micronesia, Palau, Papa New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

resulted in the rise of new service activities. Owing to their geographic conditions and significant tourism sector, most Pacific countries have maintained large services sectors.

The services sector is a key provider of jobs in the region. Majority of the employed are now in services in several economies, including Kazkahstan, Malaysia, Maldives, Philippines, and the NIEs (figure 13). In 1990, only Singapore and Hong Kong, China had service employment shares of over one-half, while in PRC, Cambodia, and Vietnam, less than 20 percent were employed in services. Since then, employment shares of the services sector have risen by 10 to 20 percentage points in the latter set of economies. However, despite the rapid rise in India's services output share, the employment share of its services remains low, at 27 percent. A similar concern holds true for other South Asian economies, particularly Bangladesh, Pakistan, and Sri Lanka where services employment shares are quite low relative to their output shares.

Not only is the services sector now a large part of the economy, but has also been a huge contributor to overall growth. In the past ten years, the services sector accounted for more than one-half of GDP growth in most economies in the region (figure 14). Even during 1990s, a period of more subdued growth for the region, the services sector contributed to most of the growth. Services' contribution to growth has been higher in South Asia than in other regions. In India, Maldives, and Sri Lanka, roughly over 60 percent of the growth in 2000–10 was due to services. In Southeast Asia, the services sector contributed to over one-half of the growth in Indonesia, Malaysia, Singapore, and Philippines. But in East Asia, particularly PRC, Korea, and Taipei, China the story is still industry, rather than services, driving overall growth. As noted in ADB (2007), the services sector has played an important role in countries where the pace of industrialization has been slow such as in the case of South Asian countries and the Philippines. Furthermore, for South Asia, the modern services sector drove overall growth (see Bosworth and Maertens 2010 and Ghani 2010).

The trends identified at the global and regional levels in the previous section appear to apply broadly to developing Asia, though missing, fragmentary, and insufficiently disaggregated data impede complete documentation for all developing Asian countries. Panel data for developing Asia clearly demonstrate that the growth of services is correlated with the rise in income (figure 15) and educational attainment (figure 16) over time.

But the countries in developing Asia are not consistently above or below an international norm established by regressing the logs of services value added against per capita GDP (figure 17). While most of the developing Asian countries lie above the regression line, i.e., have larger than expected service sectors (e.g., Nepal, Bangladesh, Cambodia, Pakistan, Vietnam, India, Uzbekistan, Indonesia, Sri Lanka, Philippines, China, Kazakhstan, Thailand, Malaysia, South Korea, Singapore, and Hong Kong),

a significant number are below the line (e.g., Tajikistan, Kyrgyzstan, Lao, Mongolia, Papa New Guinea, Kiribati, Solomon Islands, Bhutan, Armenia, Samoa, Tonga, Fiji, Azerbaijan, and the Maldives.)[4]

A similar analysis can be performed on employment data, albeit with a smaller sample of countries and once again developing Asian countries reveal a mixed pattern of performance (figure 18). Developing Asia countries exhibiting greater than expected employment in services include Singapore, Hong Kong, Macau, Malaysia, and the Philippines, while developing Asian countries falling below the regression line include Kazakhstan, Thailand, Sri Lanka, and Indonesia. In short, those countries below the international norm in both the income and employment applications tend to be poorer, suggesting that developing Asia's challenges are concentrated among a group of countries where underperformance implies the greatest social cost.

Moreover, these aggregate figures to not illuminate some critical issues such as the degree of backwards and forward linkages from the service sector to the rest of the economy or the extent of diffusion of service sector productivity advances to the rest of the economy that may have a significant impact on development outcomes. To cite an illustrative example, it may be the case that a country has, say, a large information technology sector, but that sector is essentially an enclave, oriented largely toward the global market, and does not generate much productivity enhancement for the rest of the local economy. Another example would be a tourist sector based on natural cultural or historical endowments that functions as an enclave with little spillover to the rest of the local economy.

LOW PRODUCTIVITY OF ASIA'S SERVICES SECTOR

Although the services sector has been rapidly rising across economies in the region, the sector continues to be dominated by traditional activities. As in the past, traditional services comprising wholesale and retail trade, hotels and restaurants, real estate, transport, personal services, and public administration, continue to predominate (table 2). At the other end are modern services which include information and communication, finance, and professional business services; they comprise only about 8 to 12 percent of the economy in PRC, India, Indonesia, Thailand, and Taipei, China, but in advanced Organization for Economic Cooperation and Development (OECD) economies such France, Japan, and the United States, they account for about 17 to 25 percent. Only Hong Kong, China; Korea; and Singapore have sizes of modern services that are comparable with the OECD. Modern service activities are considered tradable internationally and thus offer opportunity for countries to widen as well as to

4. This listing (and the one for employment that follows) could well change if one adopted a nonlinear norm à la Eichengreen and Gupta (2009). Please refer to Park and Shin (2012) for empirical analysis based on the nonlinear models of Eichengreen and Gupta (2009).

diversify their foreign trade. Advanced economies have shifted toward a larger modern services sector, which tends to have higher productivity and better wages compared to traditional services.

A huge gap separates Asia's productivity in services from that of OECD. For most economies in the region, labor productivity is only less than 10 percent that of the OECD (figure 19). But there are economies which have already caught up with the OECD—Hong Kong, China in as early as 1990, and Singapore in 2000. Taipei, China is also closely trailing behind. But for most economies, crude estimates based on an average growth in productivity for developing Asia, at 4 percent in 2000–09, indicate that it might take about 15 to 30 years to reach even about one-fifth of the OECD's current labor services productivity. Using PRC and India's historical growth for services productivity, it will take only about 10 years for the two countries; their productivity growth rates, at around 8 percent, are much higher than in other countries. Meanwhile, there are countries where services productivity levels have barely moved in the past decade. For example, while Korea's productivity level is already 40 percent that of OECD, labor productivity growth has only been less than 1 percent, and according to some estimates, total factor productivity growth has actually been negative (Schiff 2007, Hyundai Research Institute 2010). Similarly for Thailand, labor services productivity has been stagnant. In some economies with relatively large services sectors such as Pakistan, Philippines, and Sri Lanka, labor productivity growth rates have only averaged about 2 to 3 percent.

As in services, there is an overwhelming gap between the industrial productivity levels of Asian developing economies and that of OECD (figure 20). Still, in most Asian economies, the gap from OECD's average productivity is more dramatic in the services sector than in the industrial sector (figure 21). This indeed reflects Asian economies' more mature industrial sector compared to their services sector. In South Asian countries, particularly, India, Maldives, Pakistan, and Sri Lanka, the reverse is true: Their services sectors have less catching up to do with the OECD's productivity level compared to their industrial sector. But overall, most economies face the daunting task of closing the productivity gap, either in industry or services.

The wide gap in services labor productivity between OECD and developing Asia suggests that much remains to be done to transform the region's service sector. On a positive note, this implies that there is plenty of room for productivity growth in services and thus for services to contribute to Asia's future economic growth. While a major shift toward a larger services sector has occurred in most economies in the region, not so much has changed in terms of the composition of services. Gauging by the pace by which the mix of service activities has evolved, the process of achieving a more sophisticated and modern service sector is more likely to entail a long process. Asian economies can either wait for the process to take hold or initiate bold steps to hasten the process. And while moving toward modern and high-produc-

tivity services is a desirable path for economies trapped in traditional and low-productivity services, for the poor an immediate concern is that services should act as a direct instrument in bringing about a more inclusive growth, an issue we explore in the next section.

Going forward, fostering productivity growth in services will require tackling both internal and external distortions. Liberalizing trade and foreign direct investment (FDI) in services can promote productivity and efficiency for the same reasons as goods trade and FDI**.** One specific channel is via imports of modern business services from the advanced economies. However, in order to ensure productivity growth of the services sector as a whole rather than a few high-productivity enclaves, it is vital to remove domestic distortions such as excessive regulation**.** A more competitive market environment resulting from the removal of internal and external distortions holds the key to lifting productivity growth.

A more productive services sector has positive spillover effect on manufacturing and the rest of the economy. For example, efficient information and communications technology (ICT) and transportation can promote productivity across the entire economy. A strong modern services sector, in particular business services such as design, prototyping, and marketing can help middle income Asian countries move up the value chain and thus escape the much-feared middle income trap.

The government can help lay the foundation for a vibrant services sector through both policy reform and investments in physical infrastructure and human capital. As evident in the rise of India's ICT-BPO sector due to lack of regulation and PRC's stunted services sector due to pro-manufacturing policy bias, removing policy distortions can help. The experience of both India and PRC show that policy distortions can stunt the growth of the services sector. At the same time, the government can take active measures to create a more conducive environment for the services sector—e.g., investing in physical infrastructure such as telecom and education/human capital. Good infrastructure and adequate supply of human capital are especially important for the modern services industries such as the ICT-BPO industry.

ASIA'S SERVICES SECTOR HAS SOME EFFECT ON POVERTY REDUCTION AND THUS INCLUSIVE GROWTH

Services growth is correlated with poverty reduction (figure 22). The question is whether one can say anything more definitive. Once the initial level of poverty is taken into account, one can think of a number of variables related to economic performance and institutional characteristics that might affect poverty alleviation. In the former category, structural factors such as the differential growth of the agricultural, industrial, and services sectors, or the growth of public consumption are obvious possibilities. High levels of physical and human capital accumulation, in the latter case particularly with respect to women,

may be associated with rapid, and inclusive, growth. There is also some evidence that land-scarce countries may have somewhat distinct developmental trajectories and this profile may be particularly amenable to growth with equity (Leamer 1987).

Institutionally, there is some evidence that democracies tend to have more inclusive growth (though the direction of causality is debatable), and it would not be surprising if there were long-lasting legacy effects embedded in formerly centrally planned economies (Perotti 1996).

However, the problem that immediately arises is that these characteristics are highly correlated, and this high degree of collinearity may frustrate the precise identification of the causal channels of these effects. As shown in table 3, the reduction in poverty is not only highly correlated with the initial level of poverty and the subsequent growth of the services sector, but many other variables as well. Apart from its initial level, the three variables most highly correlated with change in poverty levels are the urban population share (surprisingly associated with a slower reduction in poverty), being an Asian developing country, and the growth of services output, both associated with more rapid poverty reduction. So it is not a stretch to expect that the performance of the service sector may have a significant impact on poverty reduction and inclusive growth, more broadly.

To examine this possibility more definitively, some multivariate regressions were estimated on data for 56 countries, of which 17 are developing Asian economies, covering the period 1990 to 2010. The form of the model follows the commonly used convergence growth model in which, conditional on the starting level value of the dependent variable, the determinants of the rapidity of its change are estimated. This approach to the analysis of poverty reduction has been previously explored for a shorter period, 1990–2005, by Ghani and Kharas (2010). This is but one indicator of inclusive growth; one can think of others, such as the level of employment, or employment by particular, traditionally disadvantaged groups, such as women. These regressions are reported in table 4.

Controlling for initial poverty, poverty change is regressed against growth in services, agricultural, and manufacturing outputs. We also explored a number of other potential drivers of poverty reduction: educational attainment, particularly female educational attainment; Polity IV democracy scores (per Kuznets a reduction in inequality with rising per capita income may reflect a greater weight put on poverty reduction due to democratization), physical investment; government consumption; urbanization; and the abundance of arable land (there is evidence that land-scarce countries may have unique development paths distinctively amenable to inclusive growth); due to their distinct institutional organization, status as former centrally planned economies (CPE); status as a developing Asian country, as well as sample period.

In this multivariate framework, most of the potential regressors were found not to be robustly correlated with poverty reduction. As expected, initial poverty is consistently correlated with poverty

reduction, indicating that countries with higher poverty rates tend to have faster rates of poverty reduction. Results of the basic model (specification 1 in table 4) indicate that change in poverty is negatively related to growth in services output, i.e., growth in services output is significantly associated with poverty reduction. Neither agricultural nor manufacturing output growth is significant in the model. Additionally, former centrally planned economies exhibit more rapid rates of poverty reduction. The results are broadly in line with the results of Ghani and Kharas. In specification 2, the share of females attending secondary school or higher at the beginning of the sample period is included. Female education is significant associated with poverty reduction. Service output growth, initial poverty, and status as a former CPE remain significant. In specification 3, we remove the former CPE variable as well as the insignificant manufacturing and agricultural growth variables. In their place we introduce a developing Asia binary variable. To be clear, it is not theoretically obvious why specific regions of the world should exhibit distinctive results. That said, status as a developing Asian country appears to be significantly correlated with poverty reduction. Specification 4 reincorporates former CPE into the model while retaining developing Asia. The developing Asia dummy absorbs so much sample variation that the coefficients on several apparently robust regressors, including the services variable, become statistically insignificant.

In specification 5, the Polity IV score is substituted for the developing Asia dummy variable along with the remaining regressors from specification 2. As a consequence of collinearity between female education and the polity score, the estimated coefficients on these variables are not statistically significant, though they are jointly significant at the 90 percent confidence level. In specification 6, the former CPE dummy is replaced with the developing Asia dummy. As with specification 4, developing Asia absorbs sufficient sample variation to render the service output, female education, and polity score coefficients insignificant. Jointly, the three variables are significant at the 95 percent confidence level. Similarly, female education and service production are jointly significant at the 90 percent confidence level. In short, it appears that female educational attainment, services output, and the democracy indicator are all correlated with poverty reduction, but teasing out the precise relationship is hampered by multicollinearity.

In specifications 7 through 9 the female education variable is dropped while the democracy variable is retained. Specification 7 uses the former CPE control and produces significant results for all included variables with polity score indicating a significant correlation with poverty reduction. Specification 8 includes the developing Asia dummy without the former CPE variable. The results from equations 4 and 6 are repeated as the inclusion of the developing Asia dummy renders the coefficients on the services and polity score variables insignificant. Finally specification 9 includes the former CPE and developing Asia controls jointly along with the polity score variable. Unlike specification 4 in which the coefficient on status as a former CPE was insignificant, in specification 9, the estimated coefficients on both the former

CPE and developing Asia dummies are significant. A country's polity score is also significantly correlated with poverty reduction in this specification. Services output growth, however, is not significant in this case.

In sum, visual inspection of the data along the lines of figure 22 confirm that services output is associated with inclusive growth. The simple correlations reported in table 3 show that the growth of services output is the structural characteristic more highly correlated with the reduction of poverty. The high degree of multicollinearity among the variables of interest frustrate identifying the precise causal channels, but the multivariate regressions reported in table 4 establish that while there is evidence that services growth is associated with poverty reduction, the relationship does not appear to be robust. What can be said definitively is that there is no evidence that growth of services output is associated with worsening poverty.

SERVICES, GENDER EQUALITY, AND ENVIRONMENTALLY SUSTAINABLE GROWTH

In addition to poverty reduction, greater gender equality is another key dimension of more inclusive growth. In particular, expanding access to education and employment opportunities holds the key to including women in the growth process and spreading the fruits of growth to women. Asian countries are recently paying more attention to the environmental costs of rapid growth and developing the services sector can contribute to more environmentally sustainable growth.

Services and Gender Equality

Intuitively, as an economy evolves from agriculture to manufacturing and services, services sector growth should be more conducive for female employment since services jobs tend to be less physically demanding than manufacturing jobs. Development of the services sector can widen employment opportunities for both men and women, but especially so for women. Indeed the *World Development Report* (World Bank 2012) shows that across 77 countries, services accounts for a higher proportion of female employment than male employment, and the reverse is true for manufacturing.

Ghani (2010) supports the view that the growth of services is key to female employment. He finds that countries where services account for a higher share of employment have higher female labor force participation rates. In India and Pakistan, the services sector experienced the largest growth in female labor force participation over the past three decades. Furthermore, a thriving modern services sector in India opened up huge employment opportunities for women. Women account for 30 percent of the information technology (IT) services and information technology enable services (ITES) workforce in India, which is higher than female share of services employment. But while advances in information and communication technologies can open up new job possibilities for women, they can also entail female

job insecurity and gender wage disparities rooted in gender gaps in access to education and acquisition of skills. Addressing such gaps will be crucial in enhancing the potential of the services sector in reducing gender disparities in the labor market.

Services and Environmentally Sustainable Growth

As noted earlier, as countries grow richer, the relative importance of services in the economy tends to rise. In addition, the general public tends to demand a cleaner environment in richer countries, which consequently invest more in protecting the environment. The two stylized facts—cleaner environment and services-oriented economy—may not be independent of each other. Relative to agriculture and manufacturing, the services sector tends to be less resource-intensive and thus places less strain on the environment. For example, food and beverage manufacturing uses resource inputs such as agricultural products, land, water, fuel, and electricity, in addition to labor input. In contrast, an IT firm is highly dependent only on labor and electricity. Furthermore, IT exports can be sent through the internet and so will require less transport and energy costs than manufacturing exports.

The relationship between services and environment can also be analyzed in terms of the potential impact of certain environmental risks on services. For example, climate change will affect the availability of resources, but its impact will be less serious for the services sector compared to its impact on the agricultural and industrial sectors. Still, there are service sector activities such as tourism, transport, and telecommunications which can be adversely affected by severe changes in the environment (see World Resources Institute and International Finance Corporation 2009). But overall, considering the relatively low resource-intensity of services, environmental changes are expected to have less direct impact on services compared to other sectors. This suggests that resource degradation and depletion will pose a bigger constraint to the expansion of output in agriculture and manufacturing sectors than in services. Going forward, it may be less environmentally costly to expand services than other sectors.

SERVICES, URBANIZATION, AND INFORMALITY

Asian economies are increasingly becoming more urbanized. Several cities in the region such as New Delhi, Seoul, and Shanghai are among the largest megacities in the world. Urbanization can be viewed as a natural consequence of economic growth. For the services sector, urbanization can be a major driver of the sector's growth. At the same time, urbanization, especially at the early stages, tends to generate more informal sector activities which in turn are also associated with the services sector.

Urbanization and Services Sector

Rising urbanization is associated with higher income which in turn raises the demand for a wide array of services. Thus, both traditional and modern services thrive in urban locations. There is a tendency

for service sector industries to locate in urban areas to enable proximity to both clients and suppliers. Face-to-face interaction with clients is important for many services sector industries such as retailing, education, health, and other community and personal services, so the presence of a large concentration of people in urban locations is ideal for the services sector. Services sector industries also often cater to varying business activities, so they will locate in areas with dense and diverse business settings (Kolko 2010). The evidence for Asia indicates that more urbanized economies have larger services output and employment shares (figures 23 and 24). The rapid urbanization of Asian economies is therefore another reason to expect that services will become more important as a source of growth and jobs.

URBANIZATION AND INFORMAL SECTOR EMPLOYMENT

The informal sector is a large part of the economy in many Asian countries. As share of nonagricultural employment, the informal sector accounts for over 60 percent in Cambodia, India, Indonesia, Pakistan, Sri Lanka, and Vietnam (figure 25). Since the informal sector is often dominated by the services sector, this provides another reason to suspect that services are a large part of output and employment.

One factor which may well drive the link between services and the informal sector is the importance of both in providing jobs in urban areas, especially in low income economies or at the early stages of urbanization. Many urban migrants settle for informal sector work because their low skills and limited education constitute a major barrier in finding jobs in the formal sector. It is easier for poor urban migrants to find work in simple service sector jobs such as street vendor, peddler, and small shop assistant, unlike in manufacturing where a minimum level of skill is required to become a machine operator or a worker in the production line. At substantially high income levels though, the importance of informal sector diminishes (ADB 2005), while that of services sector in general rises even more.

QUALITY OF DATA: A MAJOR PROBLEM IN THE ANALYSIS OF ASIAN SERVICES

It would be desirable to focus the discussion on a more narrowly defined range of services relatively suitable to liberalization and clear economic linkage to the performance of the rest of the economy such as "business services." What one immediately confronts, however, is the dearth of data. Indeed, one of the central messages of this study is the need to greatly expand efforts at basic data collection—one cannot manage what one cannot measure. This is an activity that the Asian Development Bank is ideally positioned to support.

Table 5 summarizes data available for developing Asian economies, based on a survey of the countries' bureaus of statistics and labor. It may well be incomplete and we would welcome identification of missing sources. Nevertheless, even interpreted as an incomplete first pass, it is cautioning. There is a tendency for occupational employment and wage data to be available at finer levels of disaggregation than sectoral output or value-added data which in turn is reported with greater granularity than the

international transactions data. This unevenness appears to be at least in part a function of bureaucratic tasking, with labor ministries tending to take the lead on employment data, economics or industry ministries taking the lead on output data, and the finance ministry or central bank taking the lead on international transactions data. Greater coordination and consistency across reporting sources could improve the usefulness of this data.

As an illustrative example, Malaysian data are reported in table 6. Thirty-eight activities are covered. Ones that might be considered "business services" are bolded.[5] For most sectors, data on revenue, expenditure, employment, wages, and the capital stock are reported. While table 6 reports only the data for 2007, the data go back to 1971 (albeit not for all sectors) which would permit the calculation of sector-level changes over time in wage rates, apparent profitability, labor- and total-factor productivity, and other indicators of interest. This would allow us to begin to analyze how these sectors responded to major changes in regulation, opening to trade, and other policies.

Unfortunately, the Malaysian data does not contain information on international transactions nor does it break down the figures by local and foreign producers. These lacunae simply underscore that while the available data does allow one to do analysis of issues of interest, there are significant limitations. And the data for Malaysia is among the best in the region. These data are a public good, and the ADB would appear to be ideally suited for supporting technical assistance and in some cases even financial support for the collection and dissemination of a richer set of indicators on an increasingly important component of economic life.

SOME CONCEPTUAL ISSUES

In this section, we explore a couple of conceptual issues pertaining to services sector development in Asia. First, we explore the relative role of manufacturing and services in the growth and development in Asian countries. Second, we examine the links between services productivity and productivity in other sectors of the economy, especially industry. Finally, we take a quick look at the potential contribution of services sector development to inclusive growth in Asia, along with the role of Asian governments in fostering more dynamic services sectors.

The Either-Manufacturing-or-Services Fallacy

Some Asian countries, most notably India, and to a lesser extent the Philippines, have succeeded in leveraging ICT and other new technologies to boost services exports and growth. Some point to the experiences of those countries as evidence that services-led growth offers a viable alternative growth and

5. A separate issue is which services are tradable (Jensen 2012).

development strategy to the traditional manufacturing-led growth. According to this line of reasoning, technological progress allows countries to leapfrog industrialization and move straight into the post-industrial phase. Regardless of the validity of the leapfrogging hypothesis—and clearly there are alternative pathways to development—framing growth and development strategy as a matter of either manufacturing or services is a dangerous fallacy (Leamer 1987). The leapfrogging hypothesis is dangerous because it can be misused as an excuse for the failures of the manufacturing sector. It is no accident that the advocates of leapfrogging tend to highlight countries which have failed to develop a strong manufacturing sector—e.g., Philippines. While India has often been hailed as the poster child of services-led growth, in fact the manufacturing sector has grown rapidly and contributed significantly to growth. Although we should not downplay the ICT-BPO industry's contributions, the industry's output and employment are nowhere near enough to carry India's growth on its own.

Upon closer reflection, framing Asian countries' growth and development strategy in terms of *either* manufacturing or services is not very meaningful because it is necessary for a country to have both manufacturing and services sectors. Indeed while the relative importance of the two sectors evolve over time, they both account for a large share of output and employment in most countries in Asia and elsewhere, and development is likely to be maximized when they move forward together symbiotically. The real challenge for Asian countries is to address the structural and policy impediments which stand in the way of efficient manufacturing *and* service sectors. For example, in the case of India, augmenting the quantity and quality of its subpar physical infrastructure will boost the productivity of its manufacturing sector.

In countries where the industrialization process has not run its course—and most of Asia falls in this category—the productivity of the manufacturing sector remains low. This implies that the sector will remain a key driver of growth and jobs for years to come, especially under a sound institutional and policy environment. It is more fruitful to look at comparative advantage from a dynamic perspective. While it is tempting to write off the industrialization prospects of, say, Philippines, we should remember that comparative advantage evolves over time. In addition, both services and manufacturing are far from monolithic and include a wide, diverse range of industries. Therefore, there are likely to be some industries in both sectors where a country may have a comparative advantage. While ICT and other new technologies have opened up a lot of new possibilities for the services sector, especially by improving their tradability, a good balance between services and manufacturing remains the most viable growth strategy for Asian countries.

Synergies Between Services and Industrial Productivity

The services sector plays an important role in raising the productivity of the manufacturing sector and other sectors of the economy. This particularly applies to business services, as they provide key intermediate inputs such as finance, legal services, human resource recruitment, marketing, and information technology to manufacturing and other sectors. Rather than handling tasks related to business services internally, manufacturing firms may find it more cost-efficient to outsource these tasks to firms that specialize in them. Increasing fragmentation of businesses processes and the corresponding growth of the global business process outsourcing industry indicate how outsourcing, including offshoring, of service functions has become an integral part of running a viable and competitive business. By unloading some tasks to specialized service providers, manufacturing companies can concentrate on their core activities, and on improving production and undertaking innovation and technological upgrade. The important synergies between services and industry become more apparent as economies develop, produce more differentiated goods, and require more efficient systems for businesses. As a very rough measure of synergies between services and industry, we take a look at the correlation between labor productivity in the two sectors. Figure 26 reveals that there is a high degree of correlation between services productivity and industrial productivity. While the correlation is likely to primarily reflect factors which affect labor productivity of both industry and services—e.g., human capital and physical infrastructure—the strength of the correlation suggests the presence of at least some synergies between labor productivity in the two sectors as well.

A limited set of studies have examined the links between the services sector and other sectors. The studies broadly indicate the critical role of the services sector in lifting economy-wide productivity. Francois and Hoekman (2010) have surveyed some studies that explore the impact of the services sector on the rest of the economy. They cite studies that indicate the importance of services in raising aggregate productivity, as well as in explaining differences in aggregate productivity levels and growth rates across countries. A study by Pilat and Wölfl (2005) indicates how services provide key contributions to production, through its direct contribution to total output and final demand, as well as through provision of intermediate inputs. Further, the growing interdependence between services and manufacturing is seen in the rising amount of services sector value added being embodied in manufacturing goods. The relationship between services sector size and productivity and living standards is examined in a study by Eichengreen and Gupta (2009). They find a positive correlation between output share of services and income per capita, but such a relationship holds only for service activities that are either a combination of traditional and modern services consumed mainly by households such as education and health, or modern services, intended for both households and businesses. Further, their study finds that modern services not only have the highest productivity growth among the services industries, but their share in output tends to rise rapidly at high income levels.

Services Sector Development, Inclusive Growth, and the Role of Government

Up to now, Asia relied largely on the trickle-down effect to spread the fruits of economic growth. The implicit assumption behind the trickle-down effect is that growth itself, especially under the type of sustained rapid growth which Asia enjoyed, would somehow automatically benefit the entire population, at least after some time lag. This assumption is not entirely without basis—early resource-scarce industrializers of East Asia, most notably China, Taipei, and Korea—did in fact experience "growth with equity" to a remarkable degree. But this achievement was linked, at least in part, to specific characteristics, including high ratios of population to arable land, recovery from warfare, and productivity-boosting land reforms that are unlikely to be generally reproducible elsewhere (Noland and Pack 2003).

However, in recent years, Asia has witnessed a growing popular demand for inclusive growth, which involves more of the population in the growth process and directly distributes the fruits of growth more widely. Two key ingredients of inclusive growth are expanded access to education and productive employment. Services tend to be labor-intensive so they play a vital role in generating productive employment opportunities. Therefore, at a broader level, services sector development can promote inclusive growth by creating jobs. Crucially, these include not only jobs in the modern services industries but also jobs in the traditional services industries.

We should avoid generalizing about the job-creating capacity of manufacturing versus services since both are heterogeneous. Some manufacturing industries tend to be more labor-intensive than others, and the same is true for services. As noted earlier, East and Southeast Asian countries were able to leverage their ample supply of labor by investing in labor-intensive manufacturing industries. Nevertheless, intuitively, general manufacturing requires a larger stock of physical capital—i.e., factories and machines—than services and is thus more skewed toward capital than services. Capital is typically held by the wealthy few while even the poor are endowed with unskilled labor. A shift in economic structure toward services can thus help to reduce poverty and inequality. The evidence resoundingly confirms that services has been a major source of jobs in Asia. In addition, there is some evidence that services development can reduce poverty. Finally, intuitively, services development may also be beneficial for gender equality.

The policy question now facing Asian governments is: What activist policies can they pursue to stimulate the growth of the services sector, beyond the standard litany of enabling reforms? These include easing entry to boost completion, reducing the regulatory burden, improving access to capital, especially for entrepreneurs and small- and medium-sized enterprises, reducing taxation on labor, and increasing the flexibility to labor markets more generally, equalizing tax treatment across sectors where manufacturing activities are often treated preferentially. One area where active government intervention can make a big difference is ICT infrastructure, especially broadband. ICT has large spillover effects on services and served as a catalyst in transforming nontradable services into tradable services. Telecom liberalization which brings down telecom service prices is a key in this context. With respect to efficiency of public

services and utilities, privatization has largely fallen out of favor but fostering more competitive markets remains the more basic challenge.

CONCLUDING OBSERVATIONS

Asia's sustained rapid growth has been fueled to a large extent by export-oriented industrialization. This is especially true for East and Southeast Asian economies which have collectively become the factory of the world. High savings and investment rates, in some cases augmented by large FDI inflows, allowed for a rapid buildup of physical capital stock. Openness to foreign technology and large workforces further expanded the capacity of those countries to make and export goods. The manufacturing sectors of the region are woven together into a regional production network in which different countries specialize in different parts of the production process, further boosting productive efficiency and the region's role as a global manufacturing hub. Reallocation of labor from low-productivity agriculture to high-productivity manufacturing underlay the region's sustained rapid growth. This labor-intensive, export-oriented, manufacturing-based growth paradigm delivered the best of both worlds—growth with jobs—for Asia.

There are a number of structural and external factors which compromise the above growth paradigm. Above all, manufacturing is now maturing and its productivity levels are high in many Asian countries. The clearest proof of this is Asia's role as a global manufacturing hub. As manufacturing matures, its productivity improves, its capacity to generate employment attenuates, and the scope for further productivity growth grows smaller. Since services industries tend to be labor-intensive, vitalizing services industries thus assumes an even greater importance in Asian employment. Therefore, Asia's future growth will depend increasingly on raising productivity in the services sector, but productivity gains in services are hard to come by. Externally, the post-global crisis moderation of growth in the advanced economies calls for domestic demand—and hence services which cater largely to domestic demand—to contribute more to Asia's future growth.

The sheer heterogeneity of the services sector, and inherent difficulty of measuring its output relative to manufacturing—haircuts versus automobiles—does not diminish its significance. In the lower-income countries of Asia, traditional services account for much of the services sector whereas in the higher-income countries, modern services play a bigger role. Such diversity of Asian countries' services sectors necessarily means that each country faces different priorities in services sector development, but strengthening modern services remains a common region-wide challenge. The intangible nature of many services does not take anything away from their very real economic effects, especially in employment but also broader economic dynamism. In addition, there are potentially large synergies between services on one hand and manufacturing and the rest of the economy on the other. For example, efficient energy, transportation, and distribution networks boost the productivity of the manufacturing sector. A strong

modern services sector, in particular, business services such as design, prototyping and marketing, can move middle-income Asian countries up the value chain toward higher value-added activities and thus help them escape the much-feared middle income trap.

Our overview of Asia's services sector indicates that it already accounts for a large share of the region's output and employment. This is hardly surprising since the industrialization process, during which the share of output and employment in both services and industry typically rise at the expense of agriculture, is under way in most of Asia, including its poorer, less developed economies. Furthermore, the growth of the services sector has already made a sizable contribution to the region's economic growth. We also find some evidence that services sector development can lower poverty in a region which still remains home to almost two-thirds of the world's poor despite a great deal of progress. At the same time, our overview indicates that there is plenty of scope of further growth and development for Asia's services sector. For one, traditional services still account for a large share of Asia's services sector. Partly as a result, Asia's services sector lags far behind the OECD in terms of labor productivity.

The gaping productivity gap between Asian countries and OECD economies implies a wide range of structural and policy impediments which must be removed in order for Asia to fully unleash the potential of the services sector as an engine of growth and jobs.

Internally, these include the strengthening of labor and capital markets, reform of tax regimes, and elimination of burdensome regulations which typically protect incumbent firms, and thus stifle competition and innovation (see, for example, Wölfl et al 2010). The international historical experience shows that regulatory reforms often deliver significant economic benefits, such as higher labor productivity and lower prices (see, for example, OECD 2005). External barriers such as barriers to trade in services also impede competition in domestic services markets. Reducing such barriers can not only promote efficiency and productivity in services but also contribute directly to exports and growth—e.g., India's well-known success as an ICT-BPO exporter. The overall guiding principle for Asian policymakers must be to create a more competitive environment for their services industries

REFERENCES

ADB (Asian Development Bank). 2012. *Asian Development Outlook 2012: Confronting Rising Inequality in Asia*. Manila, Philippines.

ADB (Asian Development Bank). 2009. *Asian Development Outlook 2012: Rebalancing Asia's Growth*. Manila, Philippines.

ADB (Asian Development Bank). 2007. *Asian Development Outlook 2007: Growth Amid Change*. Manila, Philippines.

ADB (Asian Development Bank). 2005. Key Indicators. Manila, Philippines.

Bosworth, Barry and Annemie Maertens. 2010. Economic Growth and Job Generation: The Role of the Service Sector. In *The Service Revolution in South Asia*, ed. Ejaz Ghani. New York: Oxford University Press.

Dossani, Rafiq. 2010. Software Production: Globalization and Its Implications. In *The Service Revolution in South Asia*, ed., EjazGhani. New York: Oxford University Press.

Eichengreen, Barry and Poonan Gupta. 2009. *The Two Waves of Service Sector Growth*. National Bureau of Economic Research Working Paper 14968. Cambridge, MA: NBER.

Francois, Joseph and Bernard Hoekman. 2010. Services Trade and Policy. *Journal of Economic Literature* 48, no. 3: 642–92.

Ghani, Ejaz and Kharas, Homi. 2010. The Service Revolution in South Asia: An Overview. In *The Service Revolution in South Asia*, ed., Ejaz Ghani. New York: Oxford University Press.

Ghani, Ejaz. 2010. Is Service-Led Growth a Miracle for South Asia?. In *The Service Revolution in South Asia*, ed., Ejaz Ghani. New York: Oxford University Press.

Gootiiz, Batshur and Mattoo, Aaditya. 2009. *Services in Doha: What's on the Table?* World Bank Policy Research Working Paper No. 4903. Washington: World Bank.

Houseman, Susan, Christopher Kurz, Paul Lengermann, and Benjamin Mandel. 2011. Offshoring Bias in U.S. Manufacturing. *Journal of Economic Perspectives* 25 no. 2: 111–32.

Hyundai Research Institute. 2010. The Way to Increased Growth Potential is the Efficiency of the Economic System. *VIP Report 10-36. No. 463* [in Korean]. Seoul: Hyundai Research Institute.

Jensen, J. Bradford. 2011. *Global Trade in Services*. Washington: Peterson Institute for International Economics.

Jensen, J. Bradford. 2012. *Overlooked Opportunity: Tradable Business Services, Developing Asia, and Growth*. PIIE Working Paper (forthcoming). Washington: Peterson Institute for International Economics.

Kolko, Jed. 2010. Urbanization, Agglomeration, and Coagglomeration of Service Industries. In *Agglomeration Economics*, ed., E. Glaeser., Chicago: National Bureau of Economic Research and The Chicago University Press.

Leamer, Edward E. 1987. Paths of Development in the Three-Factor, n-Good General Equilibrium Model. *Journal of Political Economy* 95, no. 5: 961–99.

Noland, Marcus and Howard Pack. 2003. *Industrial Policy in an Era of Globalization*. Washington: Institute for International Economics.

OECD (Organization for Economic Cooperation and Development). 2005. *Enhancing the Performance of the Services Sector*. Paris.

Park, Donghyun and Shin, Kwanho. 2012. The Service Sector in Asia: Is it an Engine of Growth? Background paper prepared for Asian Development Outlook 2012 Update theme chapter.

Perotti, Roberto. 1996. Growth, Income Distribution, and Democracy: What the Data Say. *Journal of Growth* 1, no. 2: 149–87.

Pilat, Dirk and Anita Wölfl. 2005. *Measuring the Interaction Between Manufacturing and Services*. STI Working Paper 2005/5, Statistical Analysis of Science, Technology, and Industry. Paris: Organization for Economic Cooperation and Development.

Schiff, Jerald. 2007. Korea's Economic Prospects and Challenges. *Korea's Economy 2007*, Vol. 23. Washington: Korea Economic Institute.

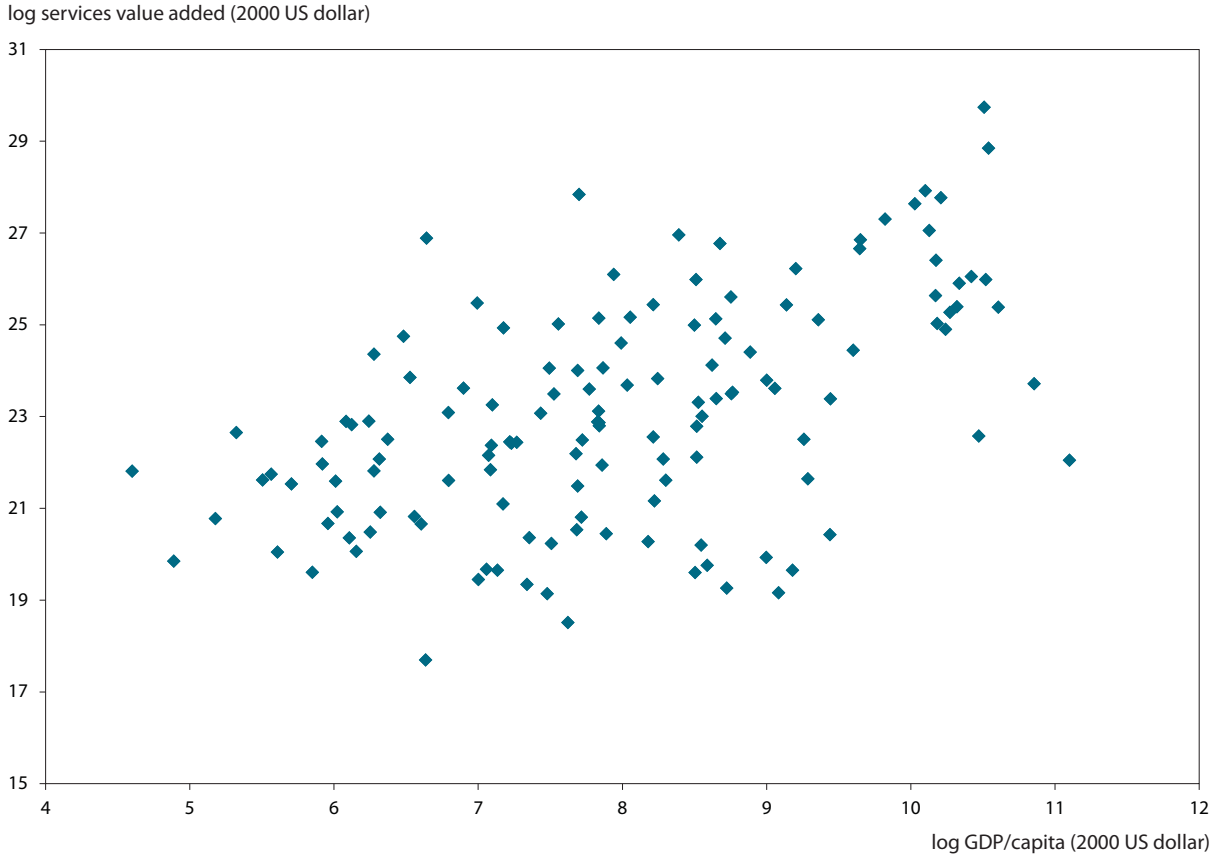
Wölfl, Anita, Isabelle Wanner, Oliver Rohn, and Giuseppe Nicoletti. 2010. *Product Market Regulation: Extending the Analysis Beyond OECD Countries*. OECD Economics Department Working Paper No.799. Paris: Organization for Economic Cooperation and Development.

World Bank. 2012. *World Development Report: Gender Equality and Development*. Washington.

World Resources Institute and International Finance Corporation. 2009. Emerging Risk: Impacts of Key Environmental Trends in Developing Asia. Washington.

Yuskavage, Robert E., Erich H. Strassner, and Gabriel W. Medeiros. 2008. Outsourcing and Imported Services in BEA's Industry Accounts. In *International Flows of Invisibles: Trade in Services and Intangibles in an Era of Globalization*, eds., M. Reinsdorf and M. Slaughter.Chicago: University of Chicago Press.

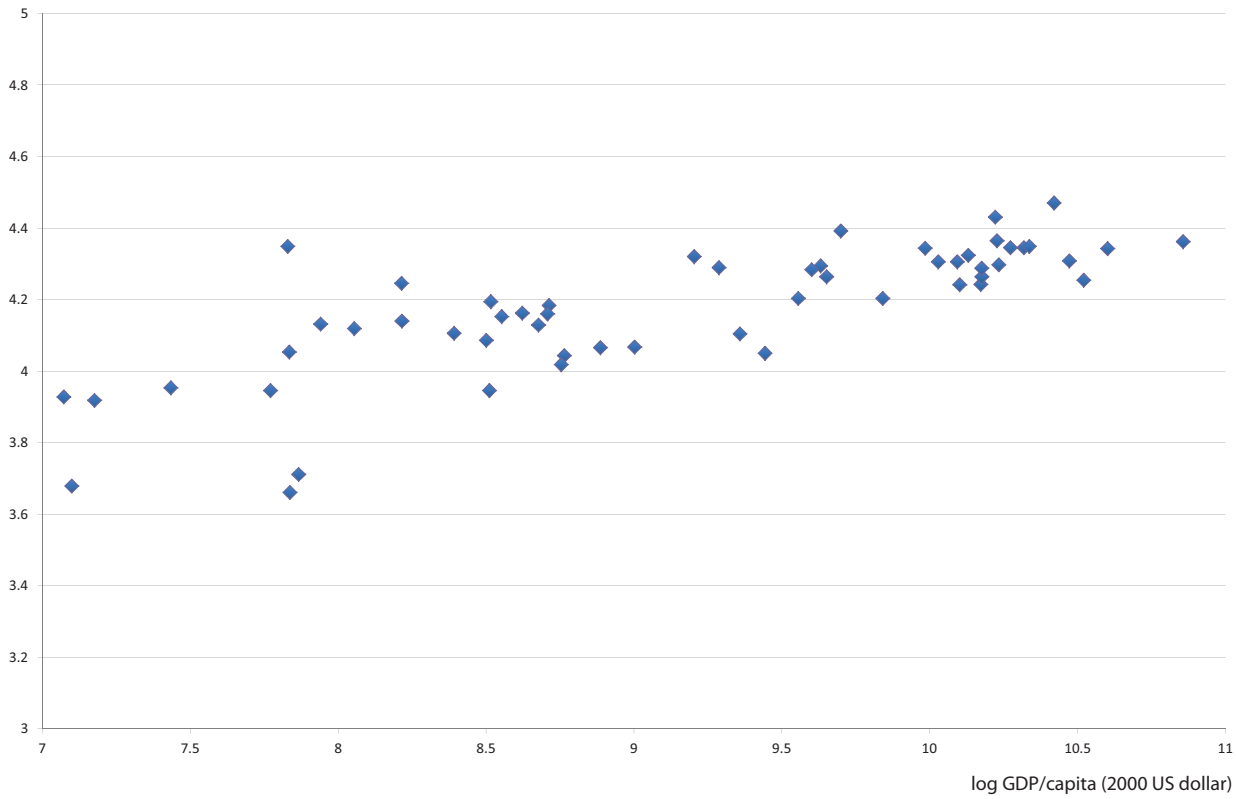
Figure 1 Snapshot: Log services value added against log GDP/capita



Note: Data reflects available observations from all countries for 2009 and is reported in constant 2000 US dollar.

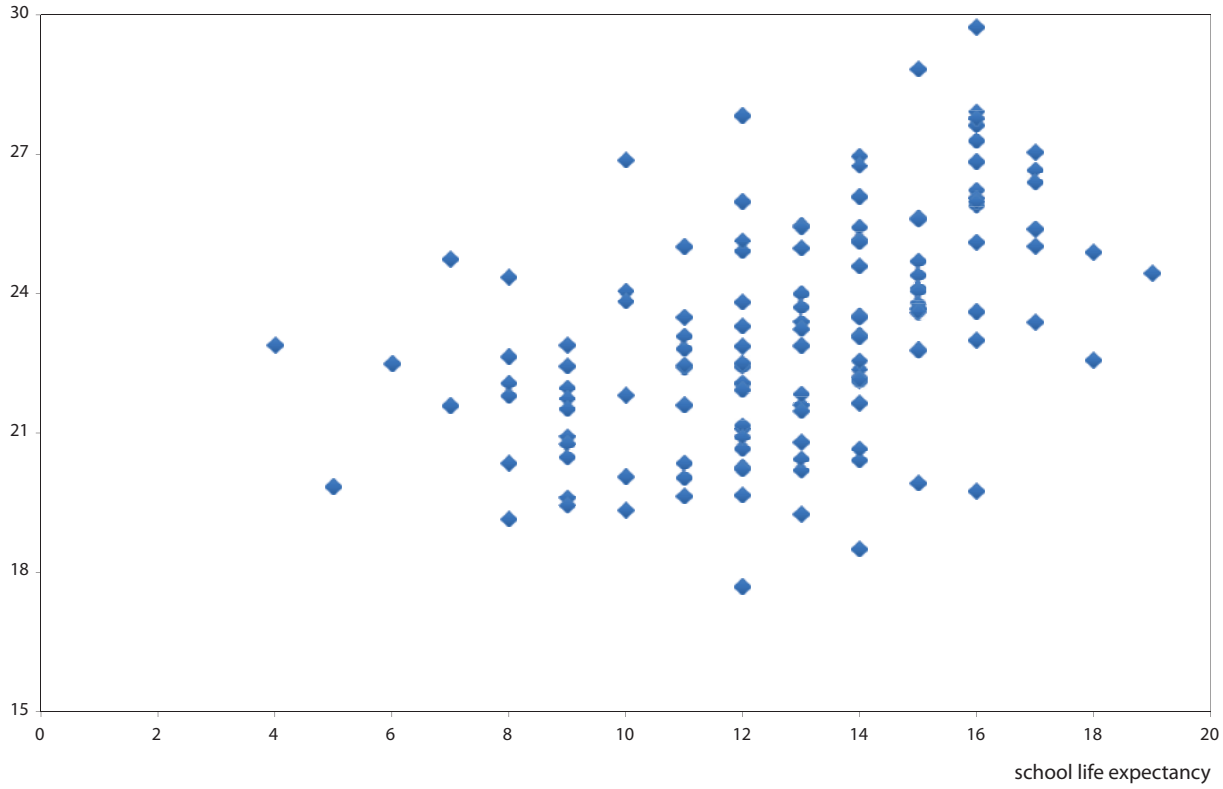
Source: World Bank, *World Development Indicators* online database.

Figure 2 Snapshot 2009: Log employment in services against log GDP/capita



Source: World Bank, *World Development Indicators* online database.

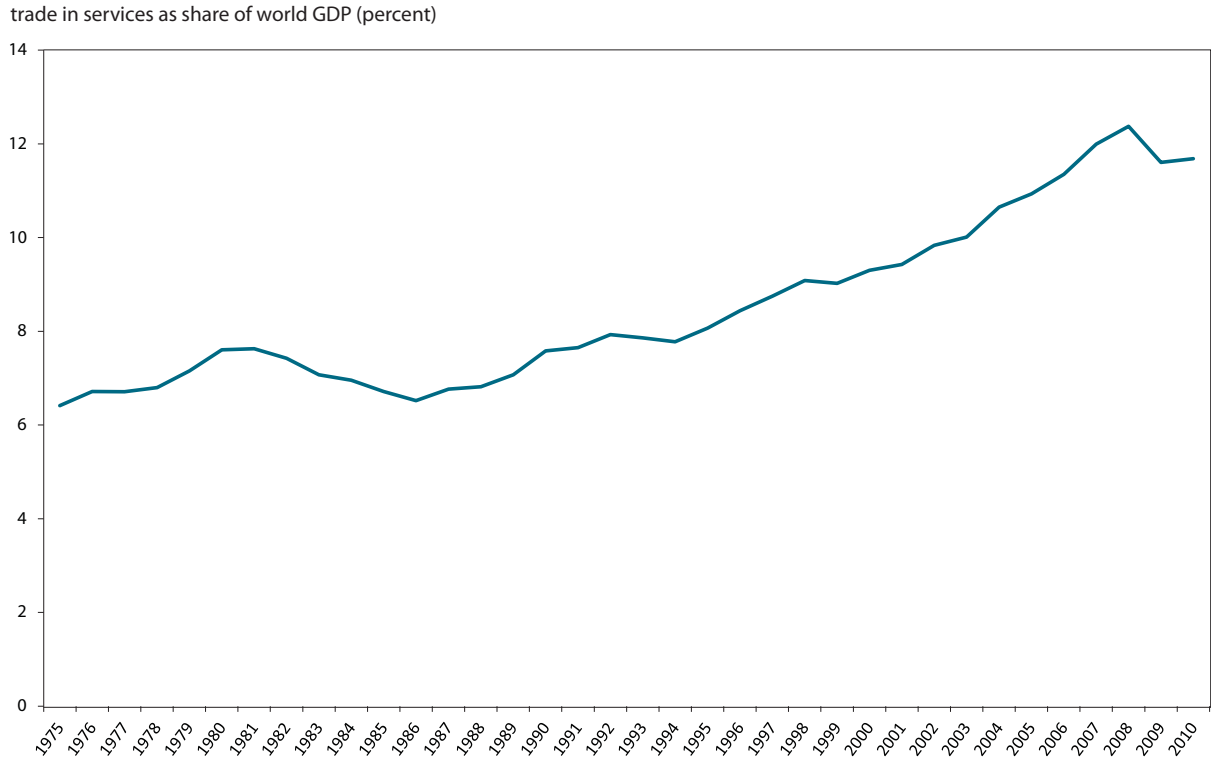
Figure 3 Snapshot 2009: Log services value added against school life expectancy



Note: School life expectancy (SLE) is the total number of years of schooling (primary to tertiary) that a child can expect to receive, assuming that the probability of his or her being enrolled in school at any particular future age is equal to the current enrollment ratio at that age.

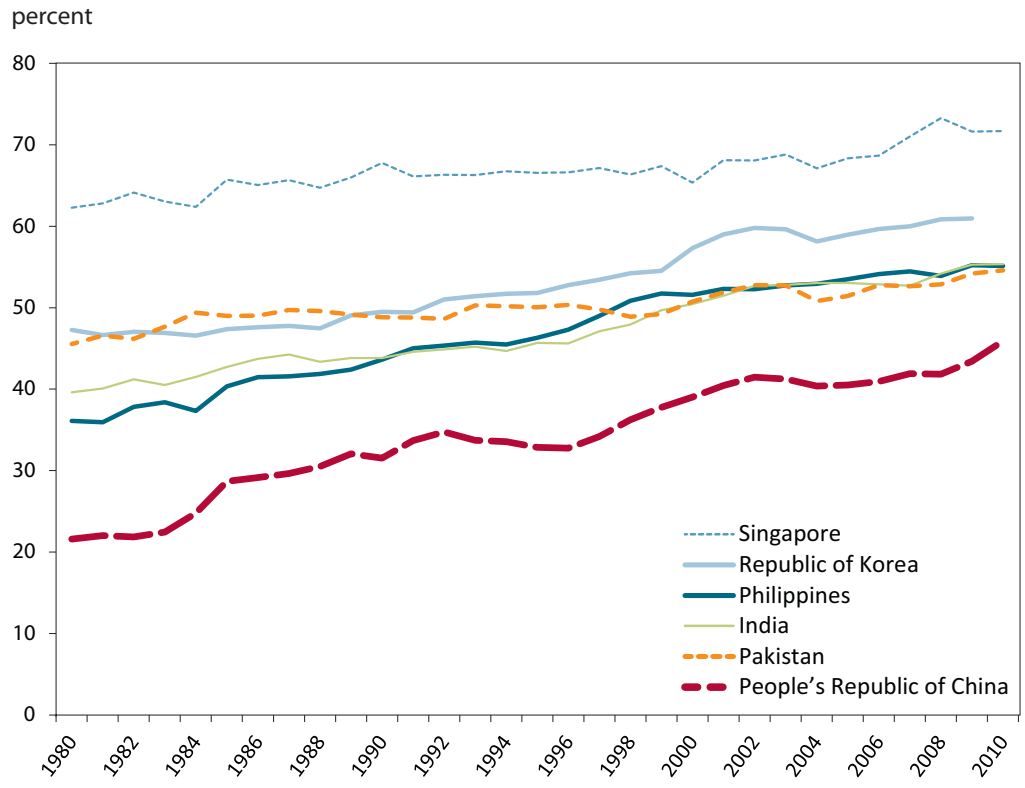
Sources: CIA World Factbook; World Bank, *World Development Indicators* online database.

Figure 4 Global trade in services as share of world GDP



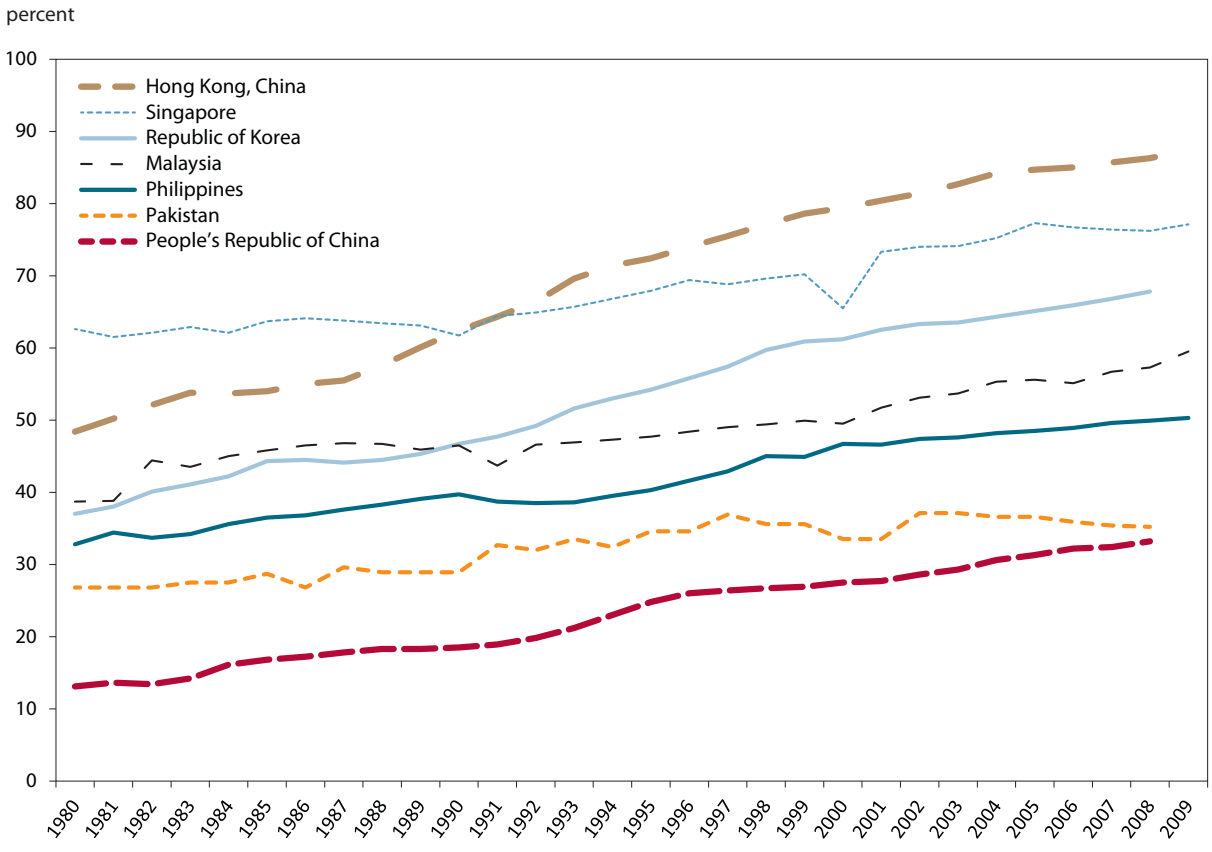
Source: World Bank, *World Development Indicators* online database.

Figure 5 Selected Asian economies: Services as percent of GDP



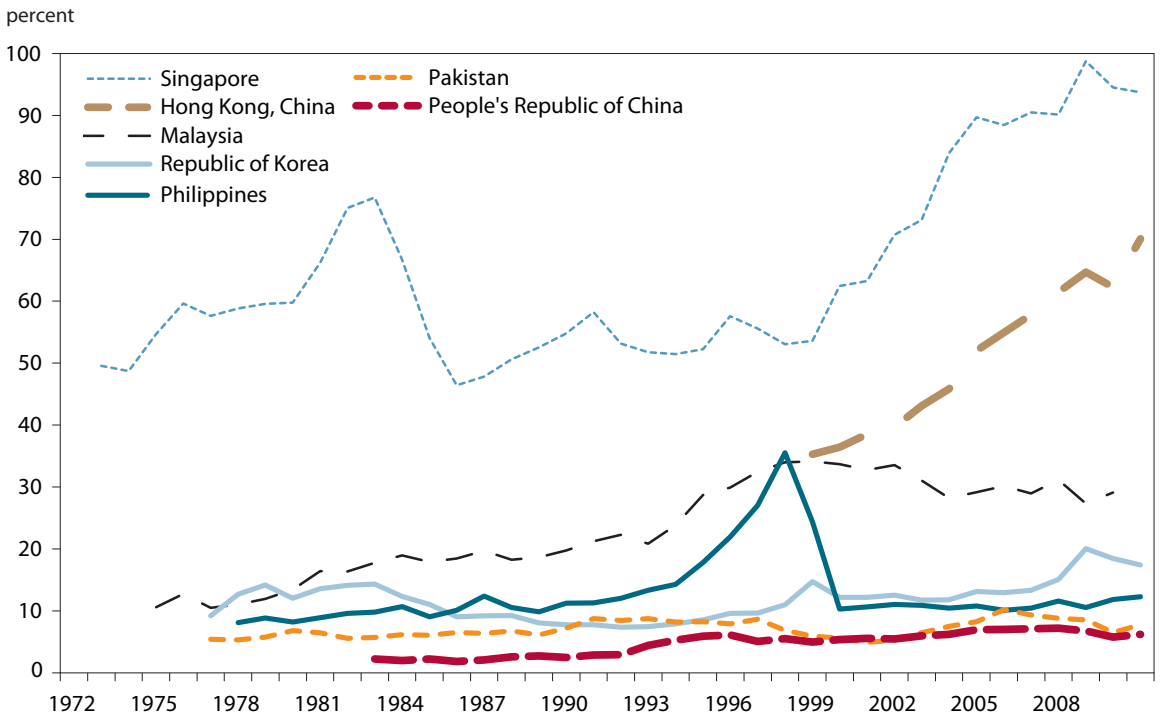
Source: World Bank, *World Development Indicators* online database.

Figure 6 Selected Asian economies: Service employment as percent of total



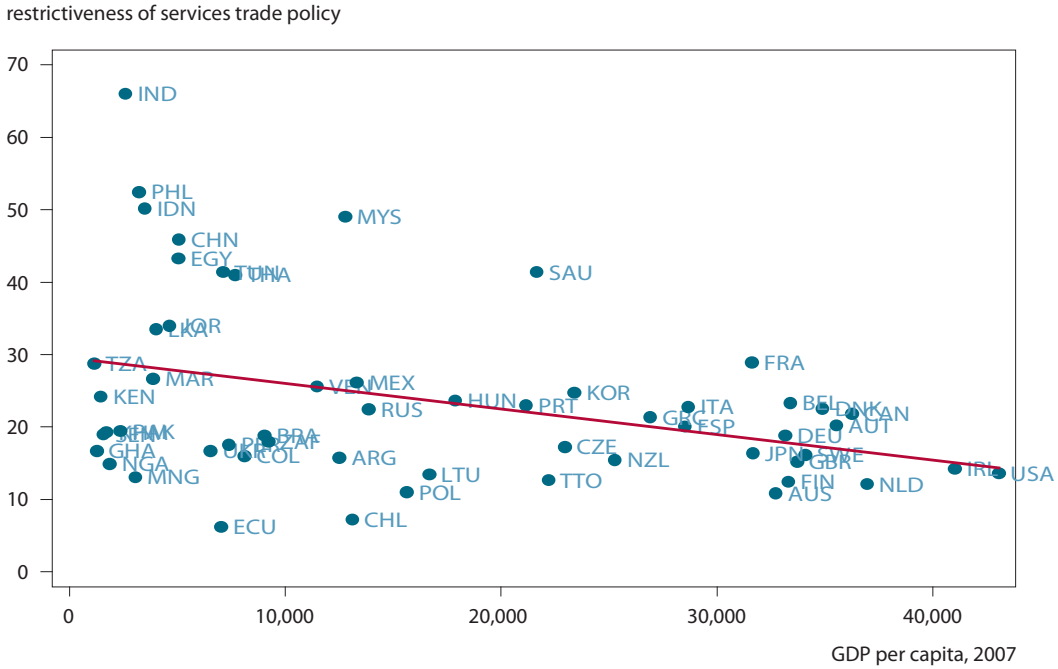
Source: World Bank, *World Development Indicators* online database.

Figure 7 Trade in services as percent of GDP



Source: World Bank, *World Development Indicators* online database.

Figure 8 Restrictiveness of services trade policies by GDP per capita, 2007

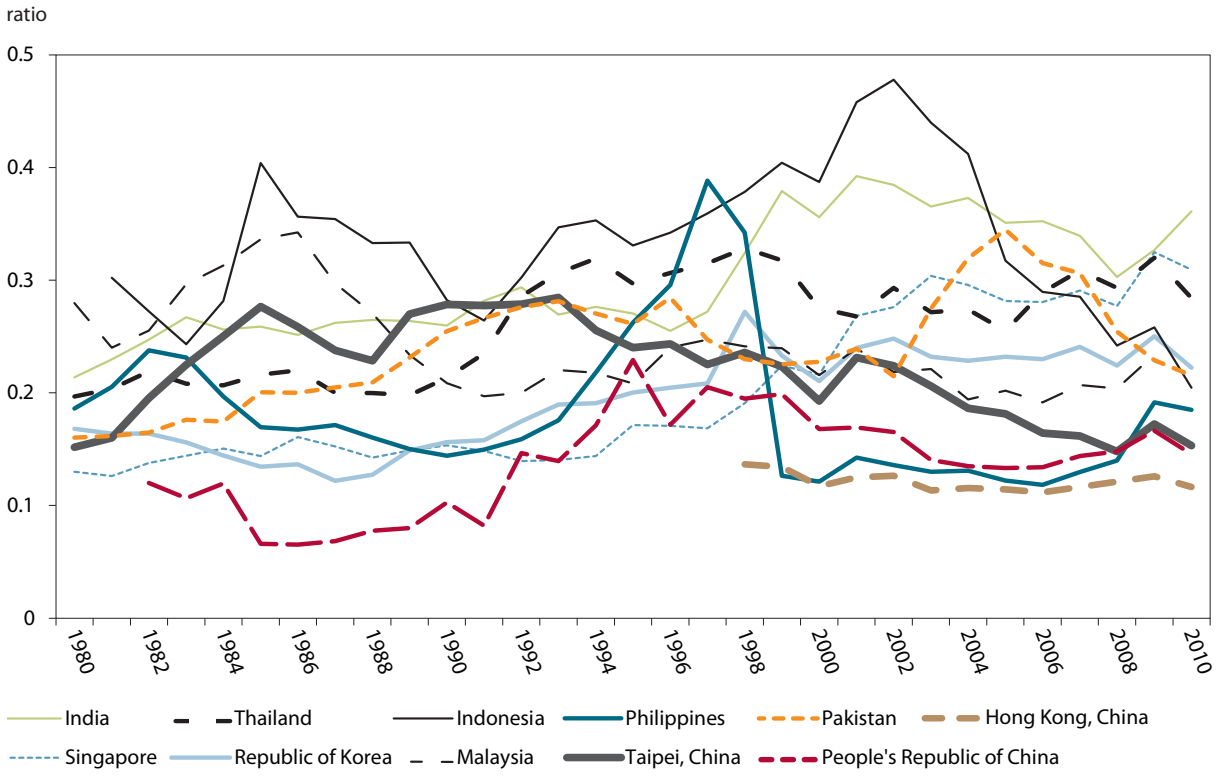


PPP = purchasing power parity
IND = India, PHL = Philippines, IDN = Indonesia, CHN = China, EGY = Egypt, TUN = Tunisia, THA = Thailand, JOR = Jordan, LKA= Sri Lanka, TZA = Tanzania, MAR = Morocco, KEN = Kenya, SEN = Senegal, PRK = North Korea, GHA = Ghana, NGA = Nigeria, MNG = Mongolia, ECU = Ecuador, COL= Columbia, UKR = Ukraine, PER = Peru, ZAF = South Africa, BRA = Brazil, VEN = Venezuela, ARG = Argentina, CHL = Chile, RUS = Russia, MEX = Mexico, MYS = Malaysia, POL = Poland, LTU = Lithuania, HUN = Hungary, PRT = Portugal, SAU = Saudi Arabia, TTO = Trinidad and Tobago, CZE = Czech Republic, KOR = South Korea, NZL= New Zealand, GRC = Greece, ITA = Italy, ESP = Spain, FRA = France, JAP =Japan, AUS = Australia, DEU = Germany, FIN = Finland, BEL = Belgium, SWE = Sweden, GBR = Great Britain, DNK = Denmark, AUT = Austria, CAN = Canada, NLD = Netherlands, IRL = Ireland, USA = United States

Note: GDP per captia, PPP (constant 2005 international USD)

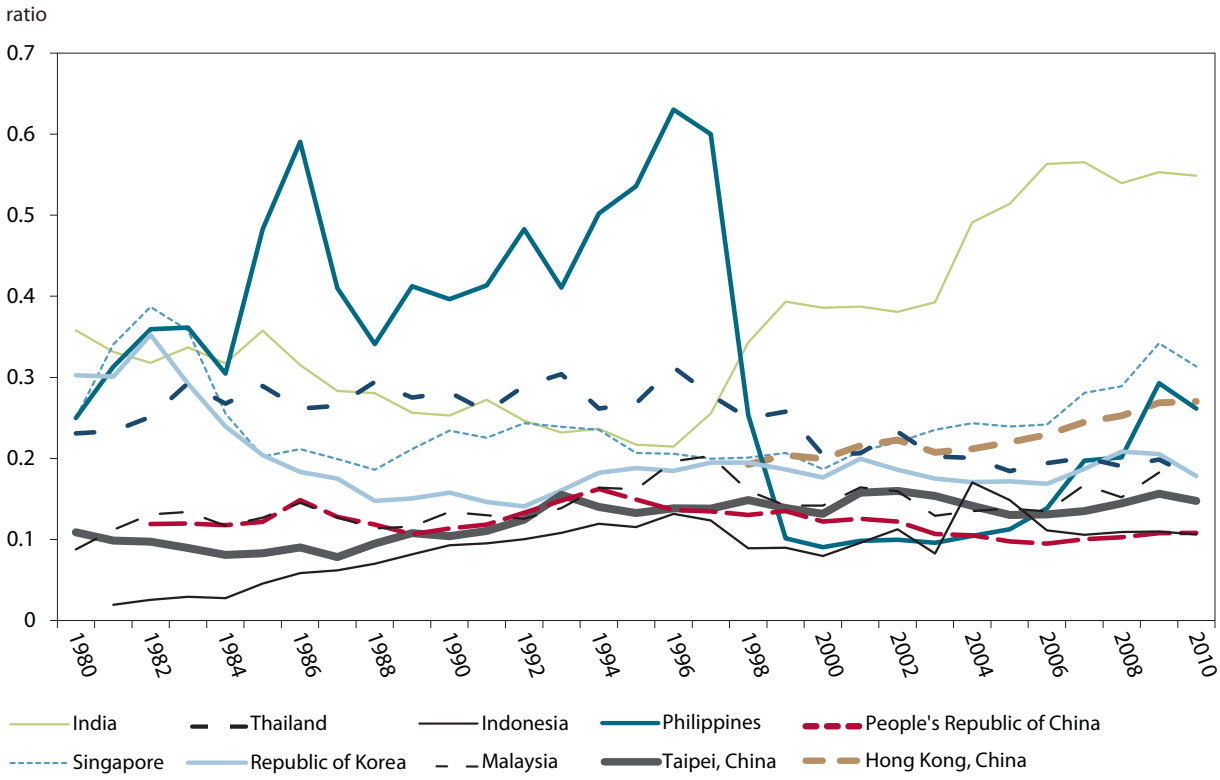
Sources: Gootiiz and Mattoo (2009), Francois and Hoekman (2010).

Figure 9 Ratio of service imports to goods imports



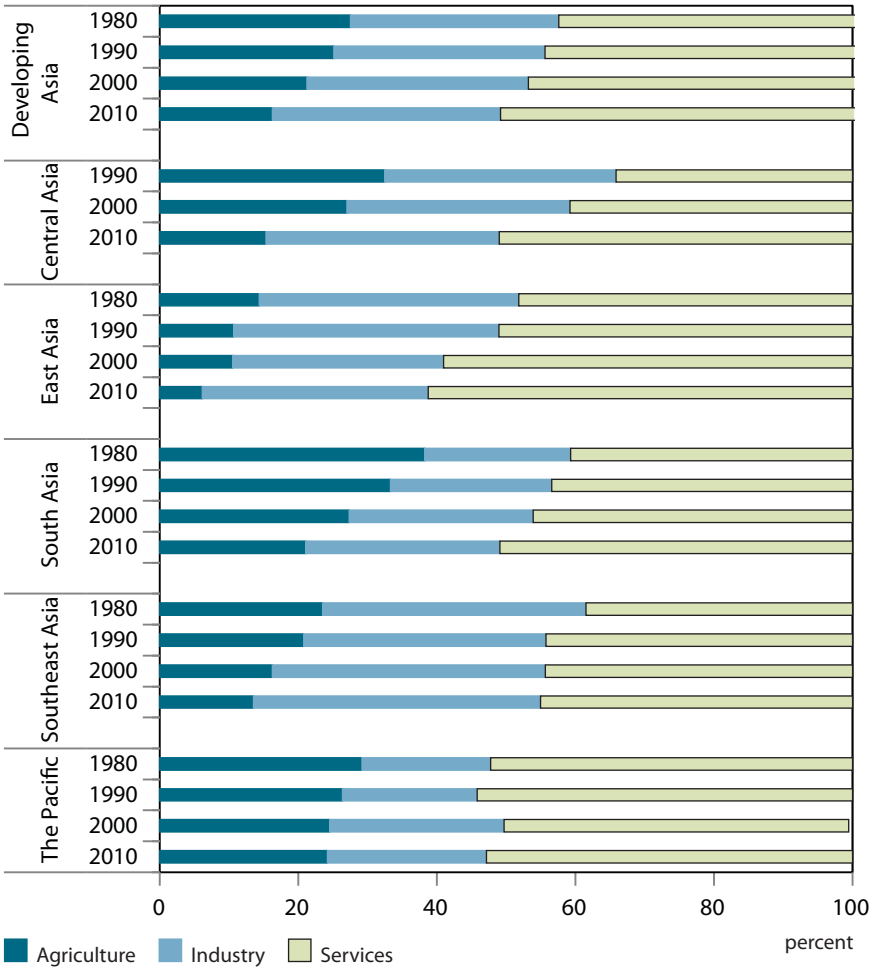
Sources: World Bank, *World Development Indicators* online database; authors' calculations.

Figure 10 Ratio of service exports to goods exports



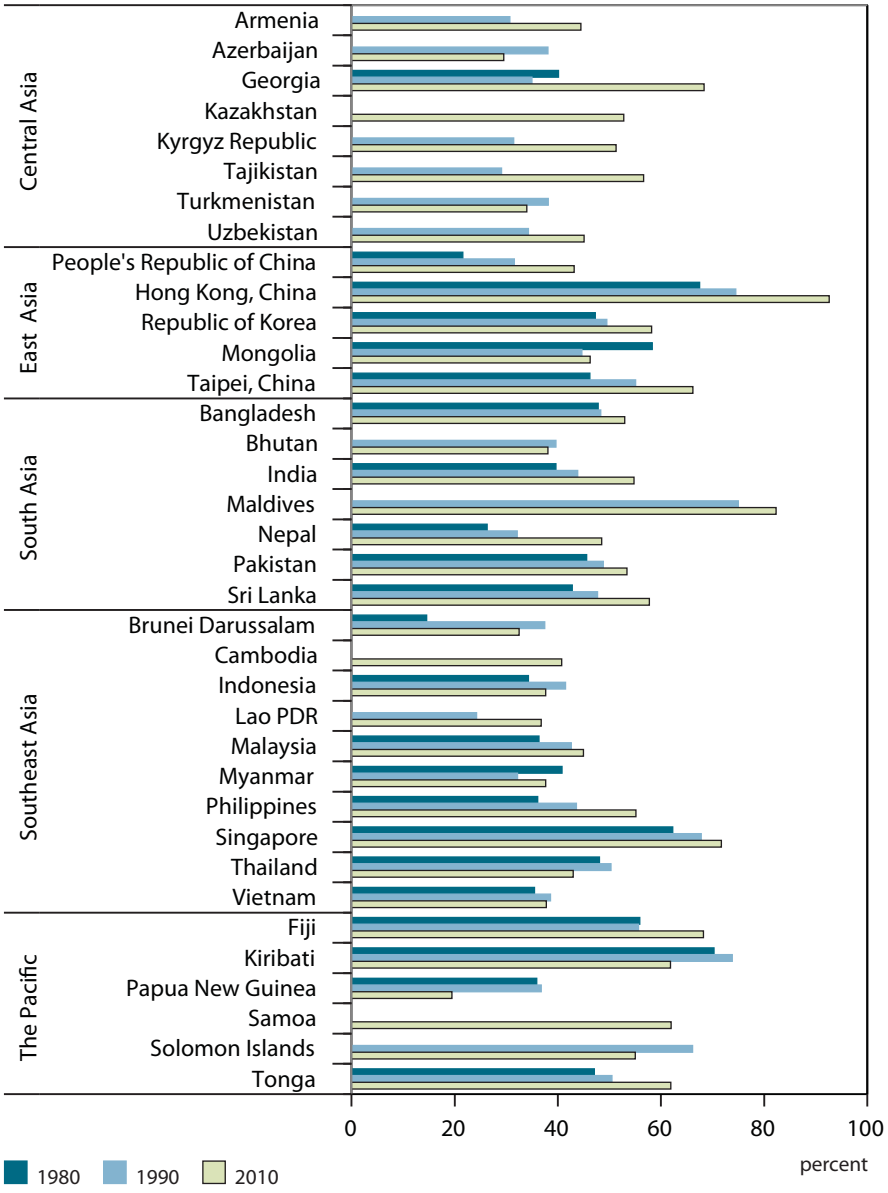
Sources: World Bank, *World Development Indicators* online database; authors' calculations.

Figure 11 Sectoral shares in GDP



Sources: Sources: ADB (2007); *Asian Development Outlook* database; CEIC Data Company; World Bank, *World Development Indicators* online database (data bases accessed April 16, 2012); authors' estimates.

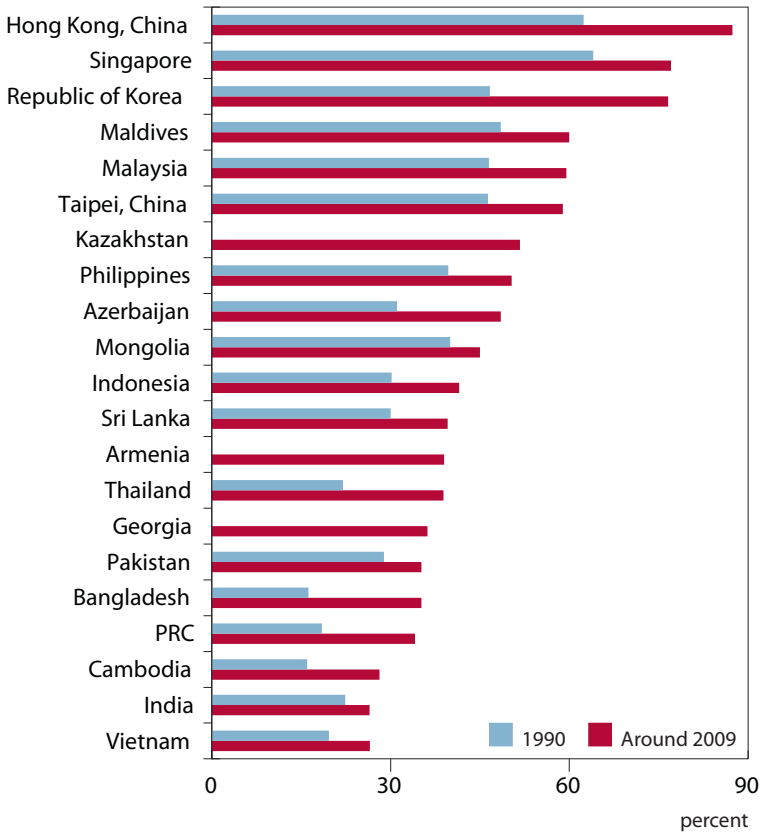
Figure 12 Share of services in GDP



PDR = People's Democratic Republic

Sources: ADB (2007); *Asian Development Outlook* database; CEIC Data Company; World Bank, *World Development Indicators* online database (data bases accessed April 16, 2012); authors' estimates.

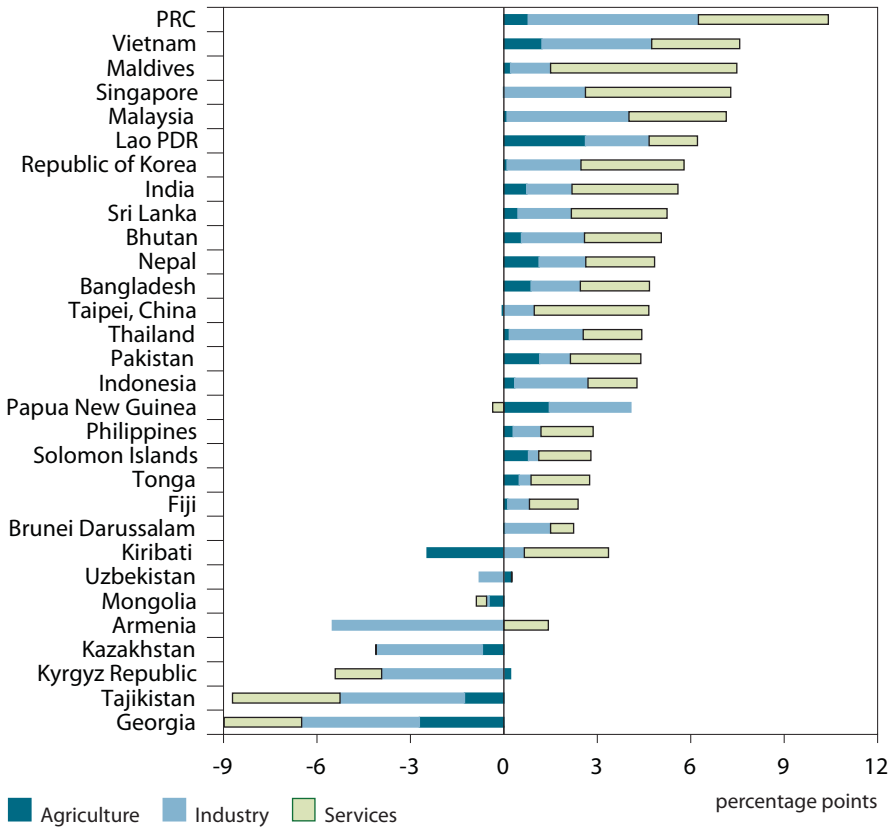
Figure 13 Share of services in employment



PRC = People's Republic of China

Sources: CEIC Data Company; International Labour Organization, *Key Indicators of the Labour Market*, 7th Edition.

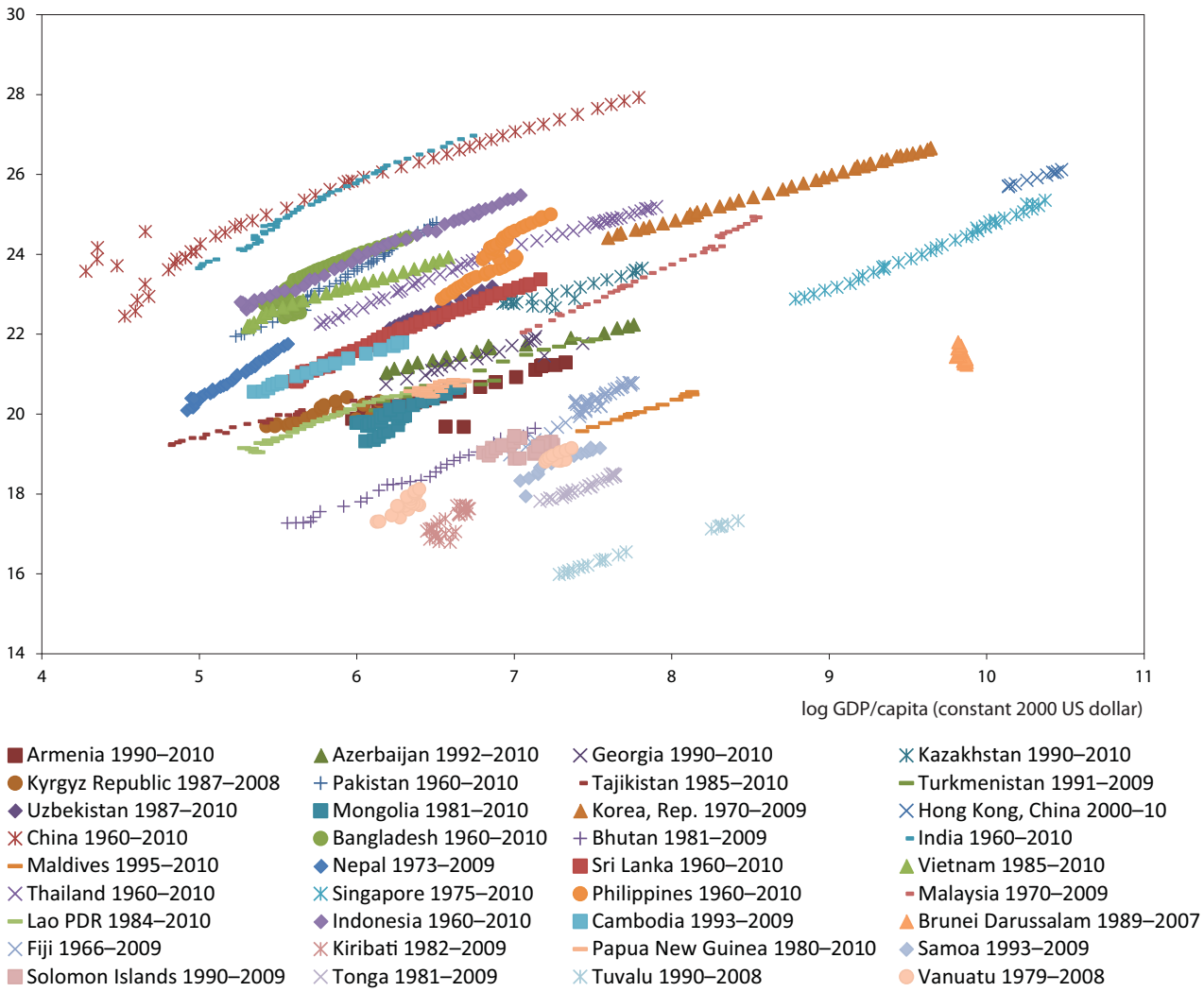
Figure 14 Contributions to annual growth, 1990–2000



PDR = People's Democratic Republic; PRC = People's Republic of China

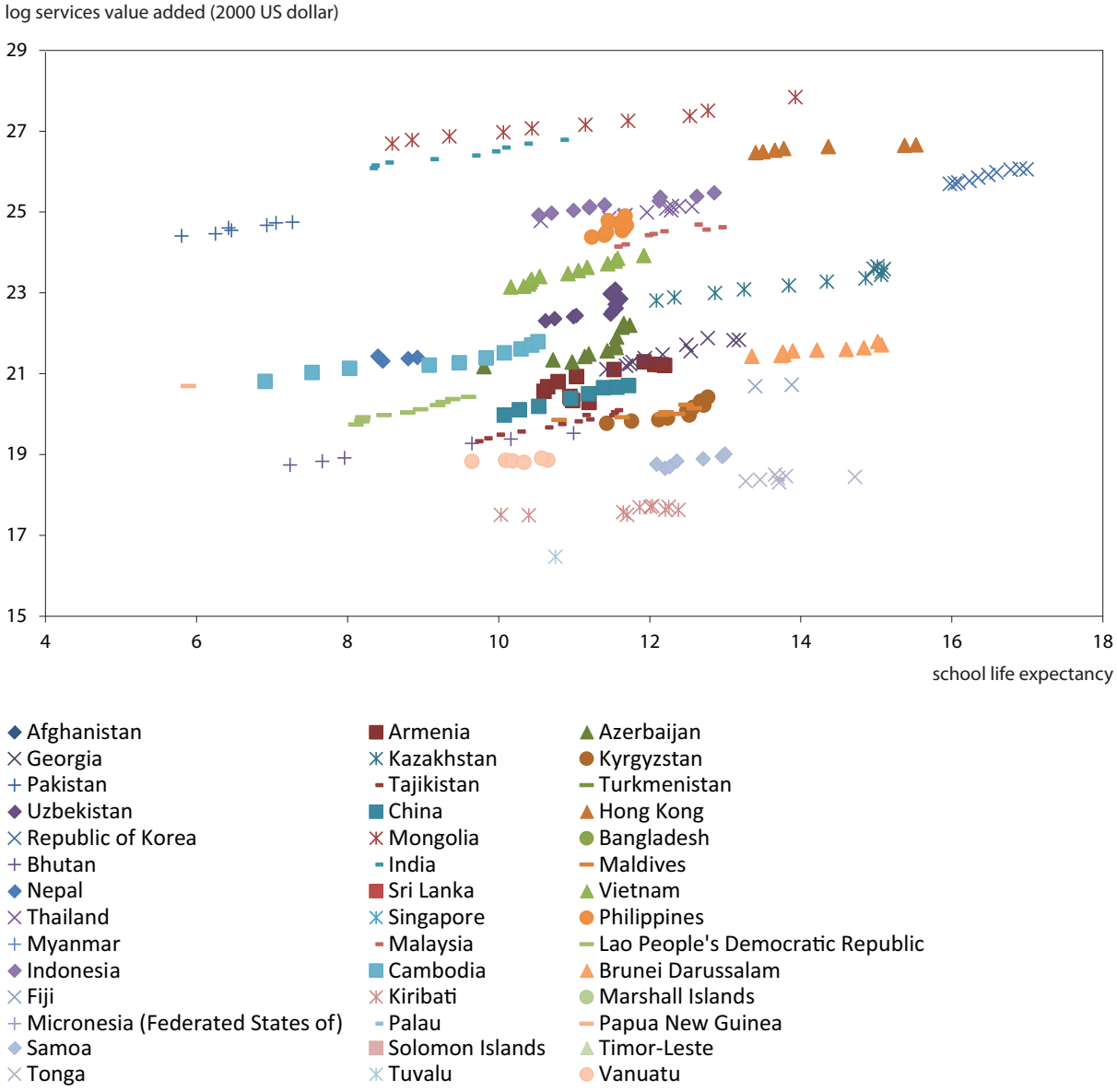
Source: Authors' calculations based on data from World Bank, *World Development Indicators* online database (accessed April 16, 2012).

Figure 15 Developing Asia log services to log GDP/capita relationship across time (1960–present)



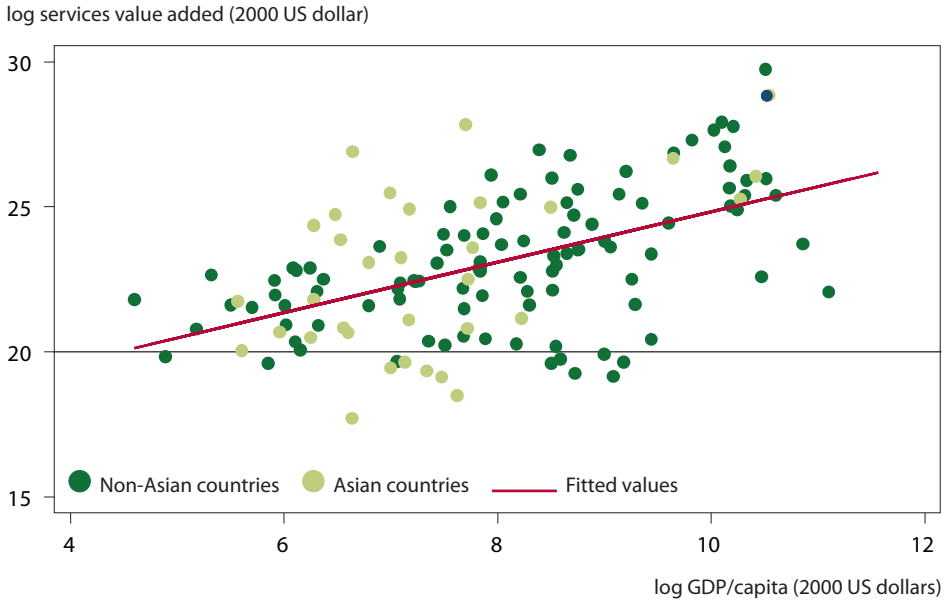
Source: World Bank, *World Development Indicators* online database. Observations include all available observations between 1960–present for developing Asia countries.

Figure 16 Developing Asia log services to school life expectancy relationship across time (1998–present)



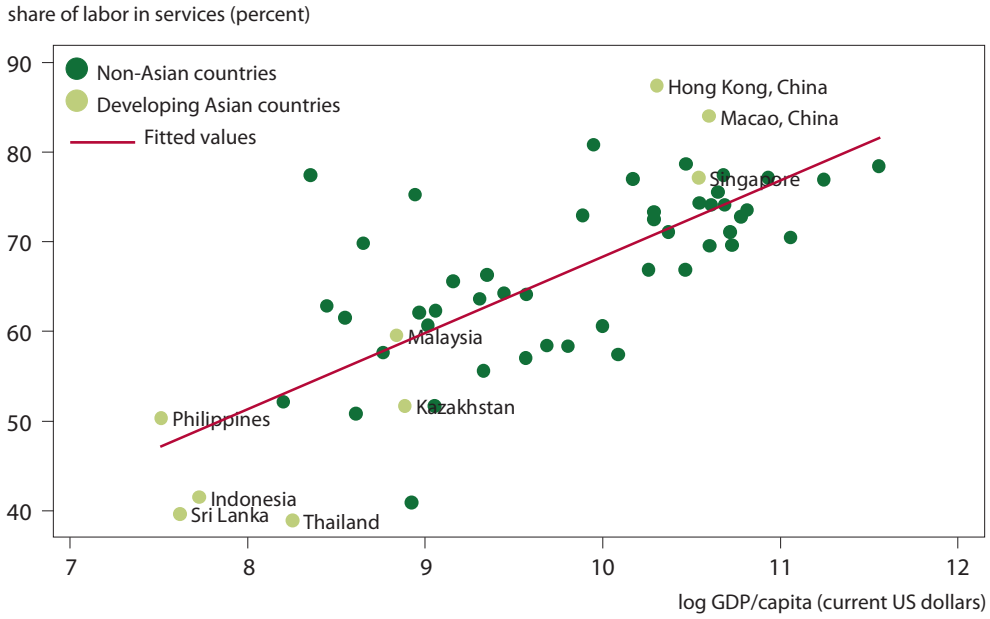
Sources: World Bank, *World Development Indicators* online database; *UNESCO Statistical Database*, author's calculations.

Figure 17 Snapshot 2009: Log services value added against log GDP/capita



Source: World Bank, *World Development Indicators* online database.

Figure 18 Snapshot 2009: Share of labor in services against log GDP/capita



Source: World Bank, *World Development Indicators*.

Table 1 Economic sectors and their two digit NAICS codes

NAICS code	Sector
11	Agriculture, forestry, fishing, and hunting
21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale trade
44–45	Retail trade
48–49	Transportation and warehousing
51	Information
52	Finance and insurance
53	Real estate and rental and leasing
54	Professional, scientific, and technical services
55	Management of companies and enterprises
56	Administration and support and waste management and remediation services
61	Educational services
62	Health care and social assistance
71	Arts, entertainment, and recreation
72	Accommodation and food services
81	Other services (except public administration)
92	Public administration

NAICS = North American Industry Classification System

Source: US Census Bureau, www.census.gov.

Table 2 Share of services in value-added, 1990 and 2010 (percent)

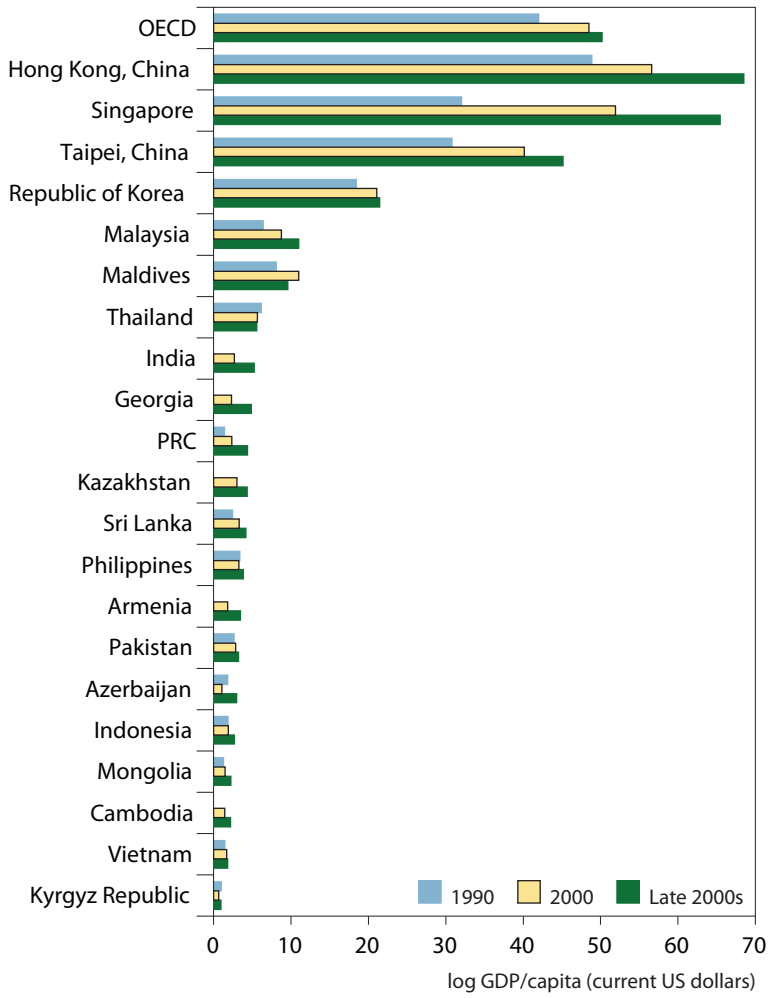
	Total services		Trade		Hotels and restaurants		Transport and storage		Real estate and dwellings		Communication, finance, and business services		Public administration, community, personal, and other services	
Economy	**1990**	**2010**	**1990**	**2010**	**1990**	**2010**	**1990**	**2010**	**1990**	**2010**	**1990**	**2010**	**1990**	**2010**
Developing Asia														
PRC	31.5	43.4	6.8	8.5	1.6	2.1	3.8	4.9	2.1	7.3	9.4	9.4	7.9	11.2
Hong Kong, China	87.2	92.9	21.8	24.0	3.0	3.3	7.7	8.1	5.1	5.2	19.4	24.4	30.3	27.9
India	46.1	54.7	11.8	15.1	1.0	1.4	6.4	6.3	5.0	6.1	8.7	11.0	13.3	14.5
Indonesia	42.4	37.7	13.5	10.9	3.2	2.8	6.1	3.4	2.9	2.6	6.5	7.8	10.1	10.2
Korea, Rep. of	51.5	58.5	11.8	8.3	2.4	2.4	4.7	4.5	6.5	8.1	11.2	16.4	14.8	19.2
Malaysia	44.9	46.0	10.9	11.9	2.2	2.3	3.8	3.3	5.4	4.1	14.4	14.6	8.3	9.7
Philippines	50.8	55.1	14.7	17.4	—	—	3.2	3.9	5.8	6.5	11.5	13.9	15.7	13.4
Singapore	67.8	71.7	13.1	16.5	3.5	2.2	11.4	8.6	3.6	4.1	26.6	29.6	9.6	10.7
Taipei, China	55.0	66.2	13.4	18.8	1.7	2.0	4.6	3.3	6.4	8.9	11.4	12.4	17.5	20.8
Thailand	50.9	43.0	17.8	13.1	5.4	4.7	4.5	4.1	2.2	1.4	11.3	7.7	9.7	12.0
OECD														
United States	73.4	80.2	12.9	11.6	3.4	3.8	3.0	2.8	12.1	12.2	18.9	25.1	23.0	24.8
Japan	59.8	72.6	12.8	12.3	—	—	4.9	4.5	9.4	13.0	13.6	17.2	19.1	25.7
France	69.2	79.7	11.8	10.6	2.3	2.6	4.6	5.0	9.8	13.4	18.9	22.0	21.7	26.1

— = data not available; OECD = Organization for Economic Cooperation and Development; PRC = People's Republic of China

Note: Initial data for Hong Kong, China, and Malaysia refer to 2000; for Indonesia, 1993; and for Philippines, 1998. Latest data for PRC and Japan refer to 2009.

Sources: Authors' estimates based on data from CEIC Data Company (accessed 25 April 2012).

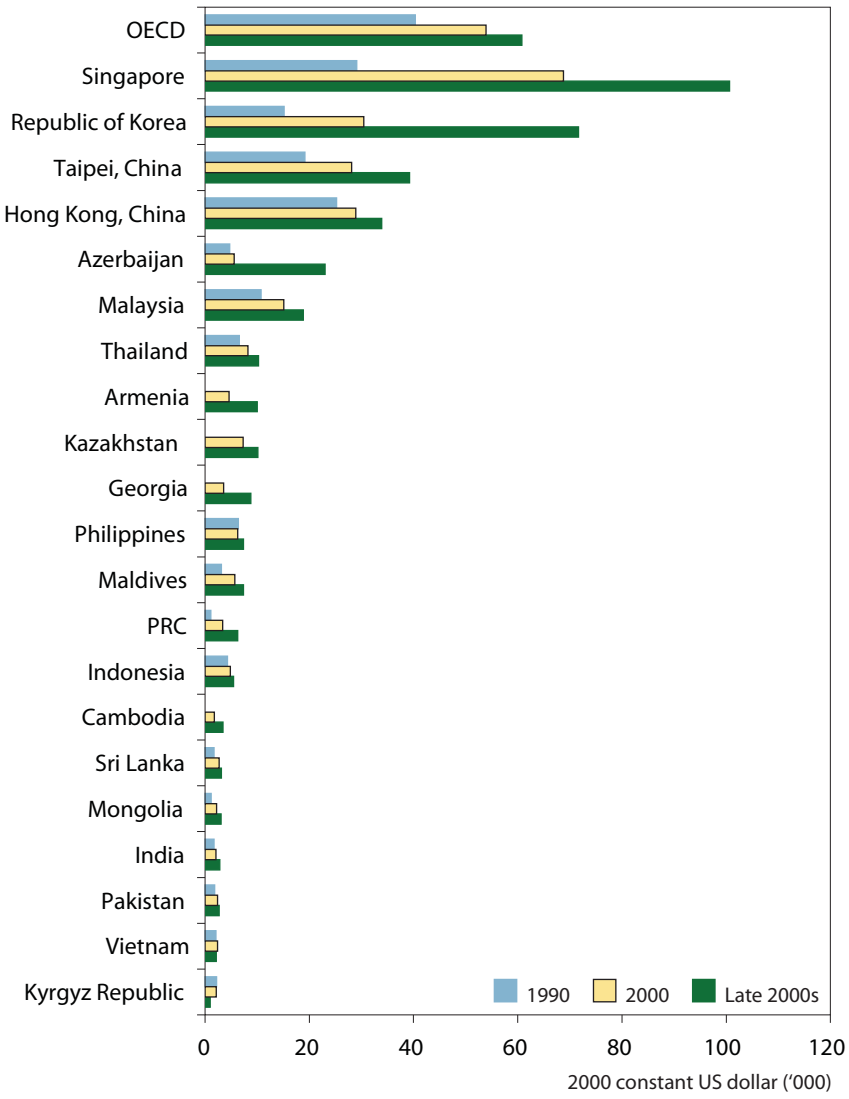
Figure 19 Labor productivity in services



OECD = Organization for Economic Cooperation and Development; PRC = People's Republic of China

Sources: ADB (2007); authors' calculations based on data from International Labour Organization (2011), *Key Indicators of the Labour Market*, 7th Edition and World Bank, *World Development Indicators* online database (all data accessed April 16, 2012).

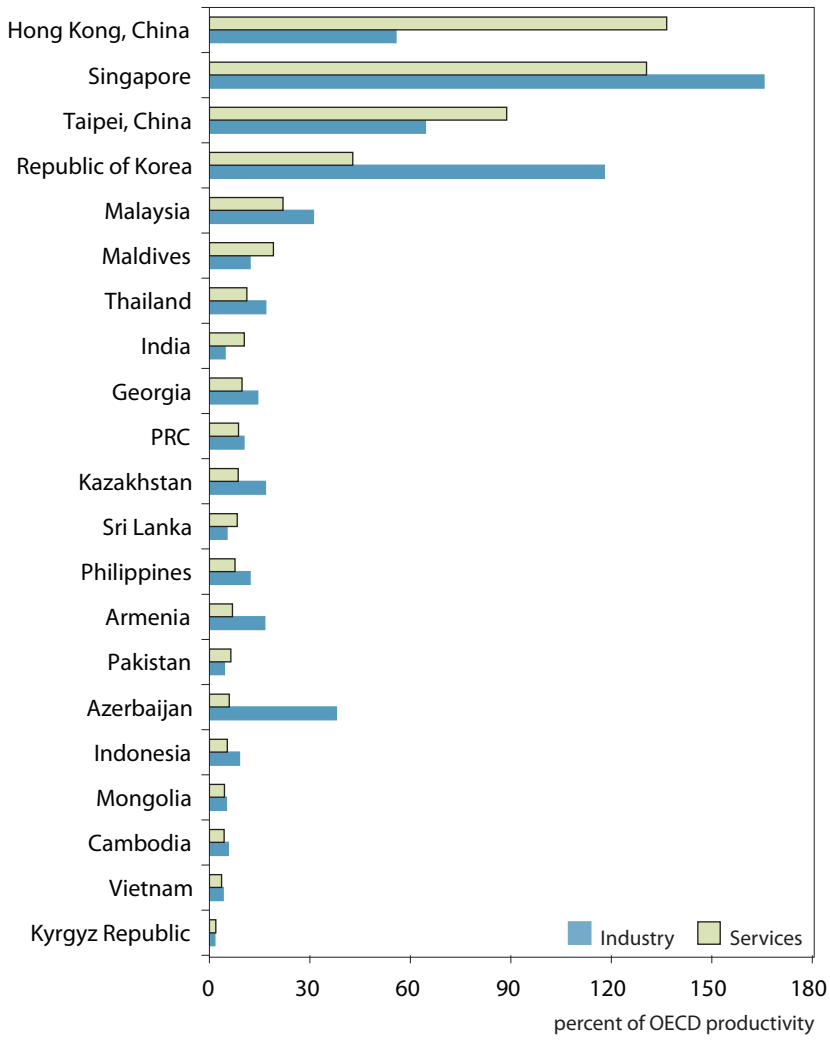
Figure 20 Labor productivity in industry



OECD = Organization for Economic Cooperation and Development; PRC = People's Republic of Korea

Sources: ADB (2007); authors' calculations based on data from International Labour Organization (2011), *Key Indicators of the Labour Market*, 7th Edition and World Bank, *World Development Indicators* online database (all data accessed April 16, 2012).

Figure 21 Labor productivity relative to OECD, late 2000s



OECD = Organization for Economic Cooperation and Development; PRC = People's Republic of Korea

Sources: ADB (2007); authors' calculations based on data from International Labour Organization (2011), *Key Indicators of the Labour Market*, 7th Edition and World Bank, *World Development Indicators* online database (all data accessed April 16, 2012).

Table 3 Correlations with poverty reduction variables

	Poverty change	Initial poverty level	Services growth	Agricultural growth	Manufacturing growth	Female education	Polity IV
Poverty change	1.000						
Initial poverty level	–.7333***	1.000					
Services growth	–.3700***	.1264***	1.000				
Agricultural growth	–.3940***	.3987***	.1704***	1.000			
Manufacturing growth	–.3602***	.2236***	.5745***	.2729***	1.000		
Female education	.2111***	–.4907***	.0428*	–.0687***	–.1599***	1.000	
Polity IV	.2655***	–.4992***	–.0521**	–.1459***	–.1535***	.4954***	1.000
Former CPE	–.2190***	0.012	.3815***	.2196***	.2019***	.3209***	–.1503***
Developing Asia	–.4688***	.2490***	.5202***	.2122***	.3465***	–.0089	–.0135
Government consumption	–.2177***	.1251***	.2958***	.0554**	.0434*	.0492***	–.0510***
Investment	–.1477***	–.0694***	.1817***	–.1905***	.3107***	.1954***	.0129
Arable land	.2416***	–.1516***	–.2273***	.0399*	–.0246	.2739***	.0655***
Urban population	.5728***	–.7051***	–.3148***	–.2088***	–.4383***	.4809***	.4802***

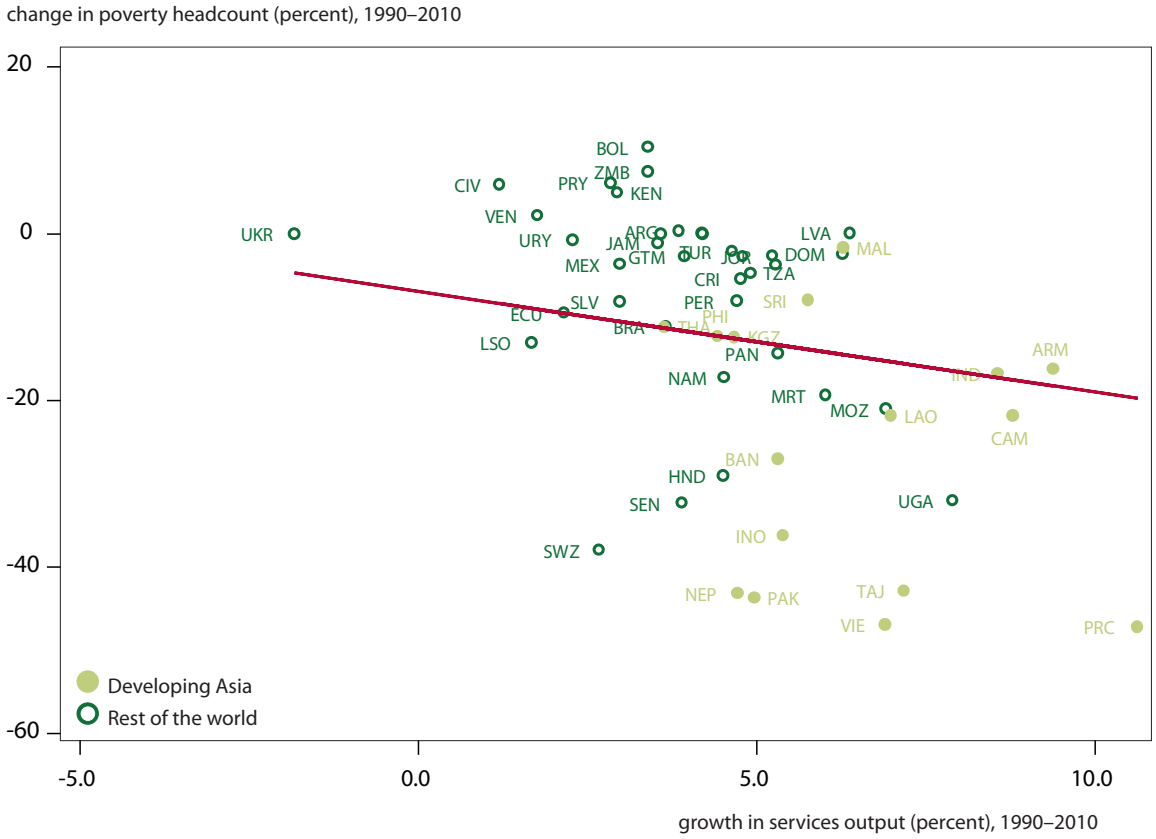
	Former CPE	Developing Asia	Government consumption	Investment	Arable land	Urban population
Poverty change						
Initial poverty level						
Services growth						
Agricultural growth						
Manufacturing growth						
Female education						
Polity IV						
Former CPE	1.000					
Developing Asia	.3049***	1.000				
Government consumption	.3152***	.0428**	1.000			
Investment	–.0376	.1578***	.0102	1.000		
Arable land	–.0976***	–.2047***	–.0321*	–.1258***	1.000	
Urban population	–.0356	–.3452***	–.1766***	.0181	.2197***	1.000

CPE = Centrally planned economy

Note: *** p<0.01, ** p<0.05, * p<0.1

Source: World Development Indicators, Barro-Lee Dataset, Polity IV project, Penn World Tables, authors' calculations

Figure 22 Change in poverty headcount and growth in services output, 1990–2010



OECD = Organization for Economic Cooperation and Development; PRC = People's Republic of Korea
UKR = Ukraine, CIV = Côte d'Ivoire, VEN = Venezuela, URY = Uruguay, MEX = Mexico, LSO = Lesotho, ECU = Ecuador, SLV = El Salvador, SWZ = Swaziland, BRA = Brazil, SEN = Senegal, HND = Honduras, NAM = Namibia, PAN = Panama, MRT = Mauritania, MOZ = Mozambique, BAN = Bangladesh, INO = Indonesia, NEP = Nepal, PAK = Pakistan, TAJ = Tajikistan, VIE = Vietnam, UGA = Uganda, PRC = People's Republic of China, CAM = Cambodia, LAO = Lao People's Democratic Republic, KGZ = Kyrgyz Republic, THA = Thailand, PHI = Philippines, PER = Peru, SRI = Sri Lanka, TZA = Tanzania, MAL = Malaysia, DOM = Dominican Republic, LVA = Latvia BOL = Bolivia, PRY = Paraguay, ZMB = Zambia, KEN = Kenya, ARG = Argentina, JAM = Jamaica, GTM = Guatemala, CRI = Costa Rica, TUR = Turkey, ARM = Armenia, JOR = Jordan

Source: Authors' calculations based on data from World Bank, *World Development Indicators* online data base (accessed April 16, 2012).

Table 4 Cross-country regressions on change in poverty headcount (at $1.25 a day), 1990–2010

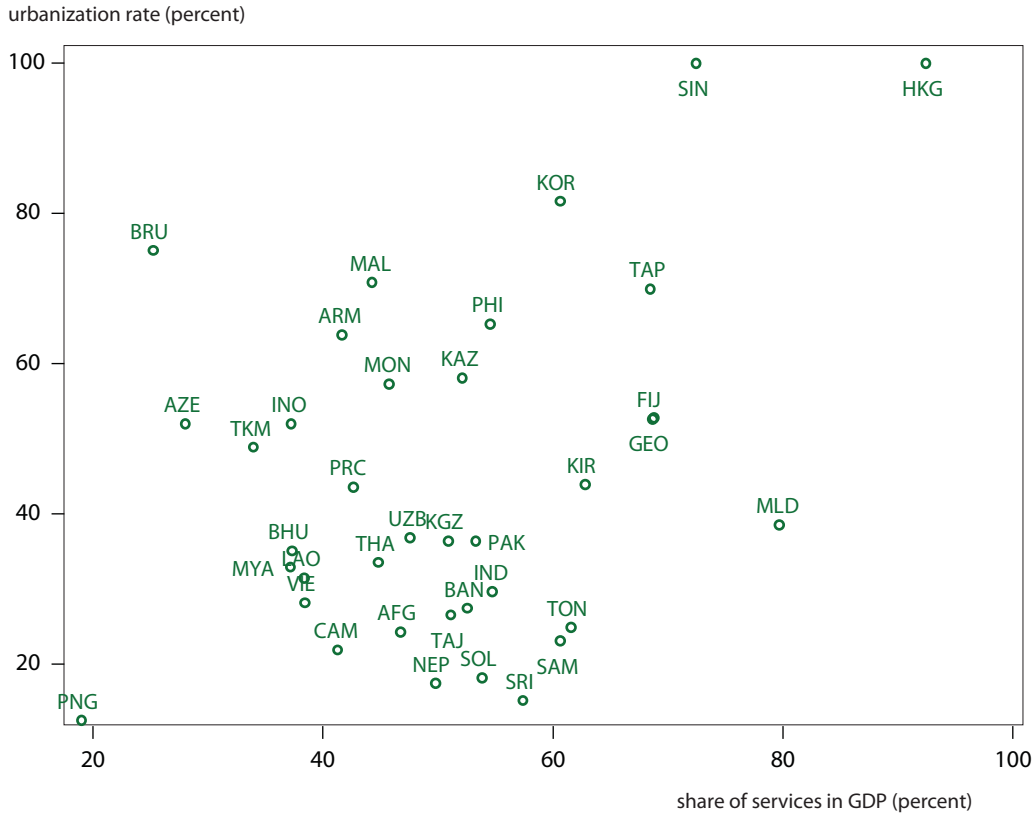
	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)	(4.7)	(4.8)	(4.9)
Initial poverty level	–0.421***	–0.465***	–0.437***	–0.428***	–0.501***	–0.450***	–0.485***	–0.405***	–0.447***
	(0.072)	(0.072)	(0.068)	(0.071)	(0.067)	(0.069)	(0.062)	(0.059)	(0.062)
Former CPE	–7.681***	–6.007*		–3.781	–8.136**		–8.682***		–6.169**
	(2.465)	(3.231)		(3.536)	(3.780)		(2.611)		(2.632)
Developing Asia			–6.816**	–6.819*		–7.651**		–8.791***	–6.560**
			(3.088)	(3.533)		(3.251)		(2.942)	(2.963)
Services output growth	–1.179***	–1.138**	–0.908*	–0.711	–1.076**	–0.846	–1.171**	–0.913	–0.673
	(0.438)	(0.480)	(0.515)	(0.509)	(0.498)	(0.550)	(0.456)	(0.553)	(0.483)
Agricultural output growth	–0.358	0.105							
	(0.819)	(0.778)							
Manufacturing output growth	0.051	–0.104							
	(0.326)	(0.425)							
Share of females attending secondary school or higher in 1990		–0.123*	–0.129**	–0.097	–0.071	–0.108			
		(0.070)	(0.056)	(0.071)	(0.085)	(0.070)			
Polity index (index range= –10 to 10)					–0.387	–0.217	–0.427*	–0.292	–0.363*
					(0.267)	(0.233)	(0.220)	(0.205)	(0.204)
Constant	21.706***	24.941***	18.572***	18.917***	24.111***	16.898**	22.193***	10.667*	16.463***
	(5.905)	(7.251)	(6.078)	(6.554)	(6.173)	(6.289)	(5.714)	(6.008)	(5.991)
Observations	56	52	54	52	52	52	56	56	56
R-squared	0.685	0.692	0.706	0.716	0.708	0.716	0.707	0.711	0.730

CPE = Centrally planned economy

Notes: Robust standard errors are reported in parentheses. "***" means significant at 1 percent, "**" at 5 percent, and "*" at 10 percent. All regressions control for time period.

Source: World Development Indicators, Barro-Lee Dataset, Polity IV project, authors' calculations

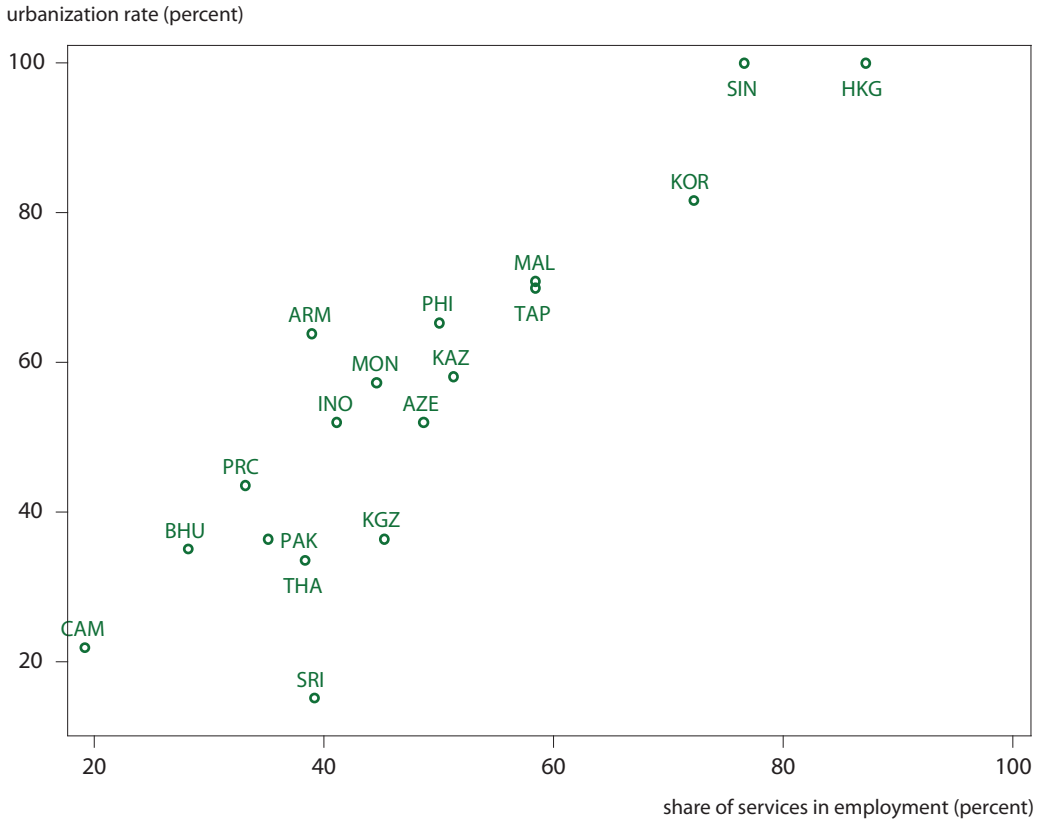
Figure 23 Urbanization rate and share of services in GDP, developing Asia, 2008/2009



Urbanization rate = share of urban population
AFG = Afghanistan, ARM = Armenia, AZE = Azerbaijan, BAN = Bangladesh, BHU = Bhutan, BRU = Brunei Darussalam, CAM = Cambodia, PRC = People's Republic of China, FIJ = Fiji, GEO = Georgia, HKG = Hong Kong, China, IND = India, INO = Indonesia, KAZ = Kazakhstan, KIR = Kiribati, KOR = Republic of Korea, KGZ = Kyrgyz Republic, LAO = Lao People's Democratic Republic, MAL = Malaysia, MLD = Maldives, MON = Mongolia, MYA = Myanmar, NEP = Nepal, PAK = Pakistan, PNG = Papua New Guinea, PHI = Philippines, SAM = Samoa, SIN = Singapore, SOL = Solomon Islands, SRI = Sri Lanka, TAP = Taipei, China, TAJ = Tajikistan, THA = Thailand, TON = Tonga, TKM = Turkmenistan, UZB = Uzbekistan, VIE = Vietnam

Source: CEIC Data Company; World Bank, World Bank, *World Development Indicators* online database (data bases accessed 16 April 2012).

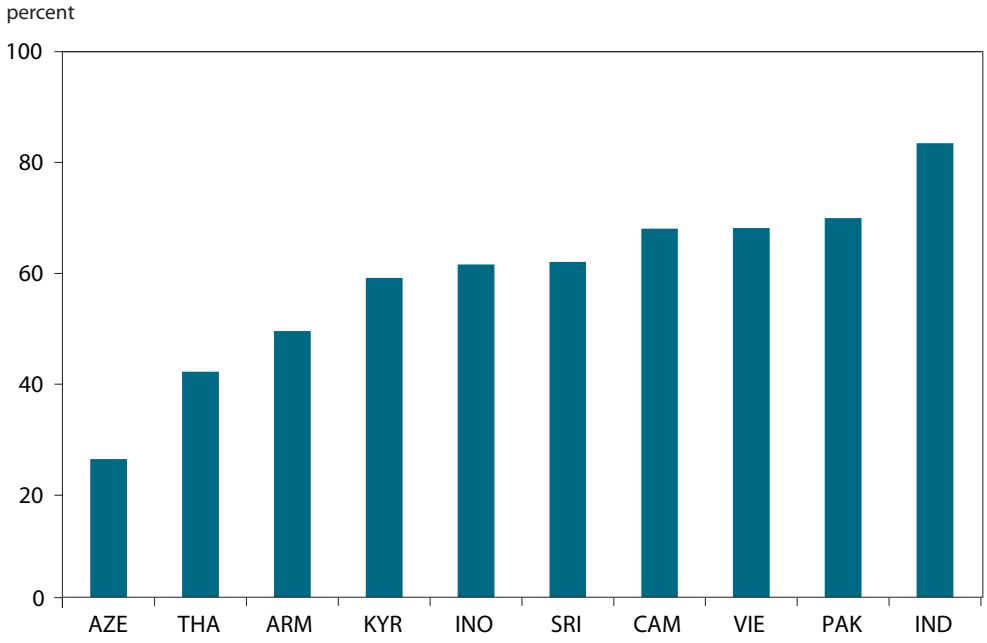
Figure 24 Urbanization rate and share of services in employment, developing Asia, 2008/2009



Urbanization rate = share of urban population
ARM = Armenia, AZE = Azerbaijan, BHU = Bhutan, CAM = Cambodia, PRC = People's Republic of China, HKG = Hong Kong, China, INO = Indonesia, KAZ = Kazakhstan, KOR = Republic of Korea, KGZ = Kyrgyz Republic, MAL = Malaysia, MON = Mongolia, PAK = Pakistan, PHI = Philippines, SIN = Singapore, SRI = Sri Lanka, TAP = Taipei, China, THA = Thailand

Source: CEIC Data Company; World Bank, *World Development Indicators* online database (data bases accessed April 16, 2012).

Figure 25 Share of informal sector in non-agricultural employment



ARM = Armenia; CAM = Cambodia; IND = India; INO = Indonesia; KYR = Kyrgyz Republic; PAK = Pakistan; SRI = Sri Lanka; THA = Thailand.

Sources: International Labour Organization (2011), *Key Indicators of the Labour Market*, 7th edition; Asian Development Bank (2005), *Key Indicators*.

Table 5 Available services data in selected developing Asia countries

	Economic data on services			Employment data on services		
Selected Asian countries	**Types of data**	**Level of disaggregation in services**	**Years available**	**Types of data**	**Level of disaggregation in services**	**Years available**
China, People's Republic of	Services value added	13	2005–present	Average wages by sector	14	2003–present
	GDP by sector	6	1978–present	Employment by sector	14	2003–present
Hong Kong, China	Exports and imports of services by sector	7	2006–present	Average wages by sector	6	2005–present
	GDP by sector	8	2005–present	Employment by sector	6	2005–present
Korea, Republic of	Service industry survey (sales, number of establishments, employment)	6	1996–2007	Average wages by sector	12	2011
	GDP by sector	12	1985–present	Employment by sector	17	2004–present
India	Net domestic product by sector	10	2005–present	Employment by sector	Full 4-digit Indian NIC coding system	2010
	Classification of output/value added by sector	10	2000–present	Employee compensation by sector	10	2000–present
Malaysia	Revenue/expenses by sector/occupation	37	1971–2007	Employment by sector/occupation	37	1971–2007
	Value of fixed assets by sector/occupation	37	1971–2007	Total wages by sector/occupation	37	1971–2007
Philippines	GDP by sector	6	2009–present	Employment by occupation	17	1990–present
				Employment by sector	11	2001–2009
Singapore	Value added by sector	7	2004–present	Employment by occupation	25	2010
	Number of establishments by sector	7	2004–present	Employment by sector	12	2011
Taiwan	GDP by sector	5	1986–present	Employment by sector	55	2011
				Wages by sector	55	2011

NIC = National Industrial Classification

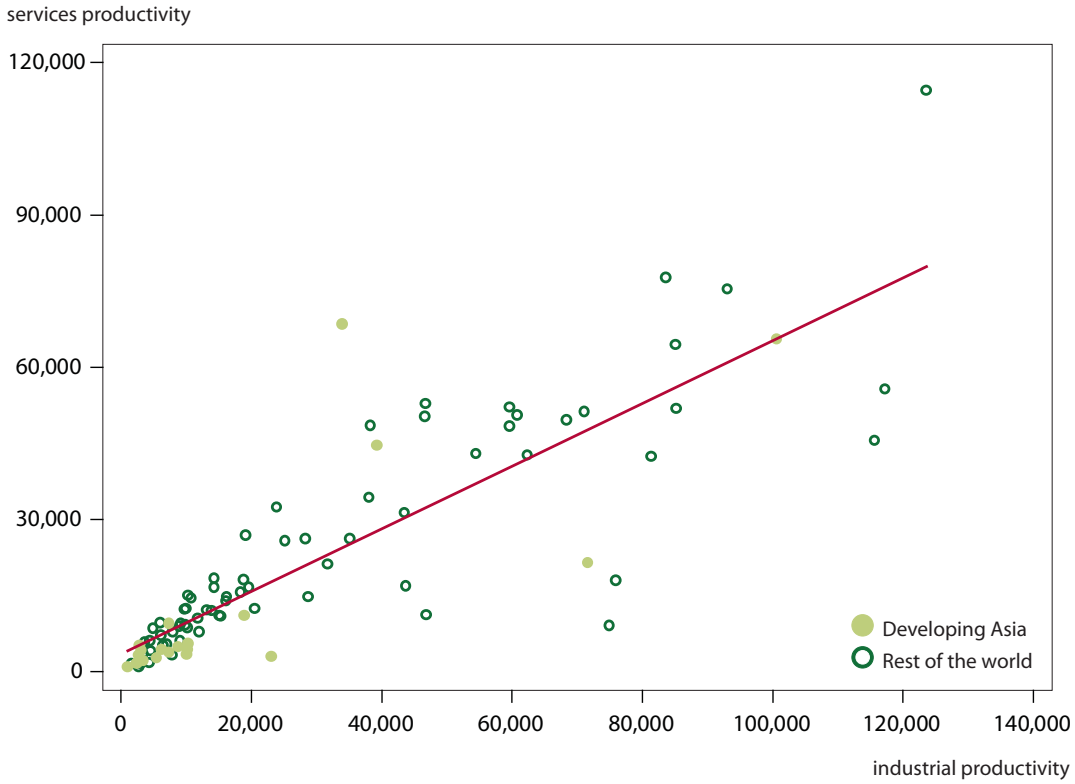
Source: Included countries' bureaus of labor and statistics, authors' calculations.

Table 6 Service employment snapshot: Malaysia 2007

Industries/occupations (business services highlighted in bold)	Revenue 1 million Malaysian ringgit	Expenditure 1 million Malaysian ringgit	Total employment (1000 persons)	Salaries and wages paid 1 million Malaysian ringgit	Value of fixed assets 1 million Malaysian ringgit
Lawyers	2,109	1,525	36	701	354
Accountants	1,464	1,089	23	604	183
Architects	1,146	953	12	310	243
Building draftsman	28	22	1	8	6
Engineers	4,956	4,427	27	1,179	492
Surveyors	1,079	912	12	313	202
Private schools	5,887	5,204	84	2,001	5,814
Driving schools	251	221	5	76	169
Medical services	2,991	2,329	31	631	857
Dental services	308	217	4	67	92
Veterinary services	71	60	1	12	18
Private hospitals	4,372	4,020	31	864	3,050
Accommodation	8,461	7,157	103	1,683	19,328
Stock, share, commodity brokers and foreign exchange services	3,202	2,035	10	471	492
Real estate agents	344	306	4	89	87
Advertising agencies	2,078	1,949	6	290	154
Motion picture projection services	234	200	1	15	134
Bus transport (2006 data)	1,168	1,267	16	294	836
Road haulage (2006 data)	6,724	6,420	48	1,066	2,510
Shipping companies	13,041	9,634	21	872	15,445
Inland water transport (2006 data)	199	182	2	34	106
Air transport	20,478	23,751	23	1,406	13,386
Train/light rail services	727	862	7	199	4,153
Other cargo services (2006 data)	1,222	983	6	155	476
Stevedoring companies (2006 data)	200	187	3	52	44
Storage and warehousing services (2006 data)	569	492	3	86	529
Parking lots services (2006 data)	447	386	4	65	469
Highway operation services	4,256	2,664	6	162	14,010
Port operation services (2006 data)	3,335	2,524	10	396	6,364
Travel agencies and tour operator services (2006 data)	5,443	5,256	15	346	572
Shipping agencies (2006 data)	946	813	4	146	241
Forwarding agencies (2006 data)	3,472	3,116	13	363	755
Post and courier services (2006 data)	2,359	1,988	24	547	469
Telecommunication services	40,118	31,977	44	2,261	24,384
Computer services	14,711	13,395	47	2,528	1,943
Wholesale trade (2008 data)	-	-	108	4,206	-
Retail trade	-	-	313	5,576	-
Motor vehicle trade	-	-	56	1,725	-
Total	158,398	138,521	1,167	31,797	118,366

Source: Malaysia Department of Statistics.

Figure 26 Correlation between services productivity and industrial productivity, late 2000s



Note: Data refer to between 2005 and 2010.

Source: World Bank, *World Development Indicators* online data base (accessed April 16, 2012).