Achieving Equity and Efficiency Simultaneously in the Primary Distribution Stage in the People’s Republic of China

JUSTIN YIFU LIN AND PEILIN LIU

This paper establishes a theoretical framework addressing the long-debated issue of efficiency and equity. Empirical evidence shows that a comparative-advantage-following development strategy promotes growth and narrows the income gap, achieving both efficiency in production and equity in income distribution. A review of the past three decades of reform reveals that development in line with the comparative advantage of the People’s Republic of China accounts for its outstanding economic performance. The dominant causes of the country’s current problems are the remaining distortions in prices and government interventions in resource allocation. Therefore, to put the government’s “scientific development outlook” into practice and to realize development with quality and speed, the country should deepen market-oriented transformation by eliminating these distortions and interventions. The inclusiveness of development can be further strengthened with financially sustainable social security and transfer payment policies.

I. INTRODUCTION

During the past three decades of market-oriented reform, the People’s Republic of China (PRC) has achieved tremendous success in economic growth and social development. Urbanization and industrialization have progressed rapidly and living standards continued to rise. The world has rarely witnessed such rapid and sustained growth in any country, particularly one so large. However, the PRC also faces serious challenges. The most significant of these is that its per capita income is still low, at about $2,000 in 2006 (NBSC 2007). The income gaps among individuals, between agricultural and industrial sectors, between rural and urban areas, and across regions remain large. Moreover, the low-income group has not benefited from economic growth as much as others and faces difficulty in accessing basic health care, education, and social security. The
government has recently put forward the “scientific development outlook”, which emphasizes improving welfare for all—that is, achieving rapid economic development while reducing income gaps and maintaining a harmonious socialist society.

Economists in the PRC have often argued that building a harmonious society requires achieving economic efficiency in the primary distribution stage—to ensure that each production factor gets returns according to its marginal contribution—while tackling the equity issue through redistribution such as government transfers, social welfare spending, and social security programs. This view is based on the assumption that economic efficiency and equity cannot be achieved simultaneously in the primary distribution (or production) stage.

Contrary to this popular view, this paper argues that efficiency and equity can be achieved simultaneously in the primary distribution stage. This can be done by maintaining full employment through sustained economic growth while reducing income gaps by making wage rates grow faster than returns to capital. In terms of policy, this requires adopting a comparative-advantage-following development strategy. This strategy involves supporting the development of labor-intensive industries and labor-intensive segments of capital-intensive industries because these are where the PRC’s current comparative advantage lies. The PRC should also improve its redistribution system to address social equity issues by ensuring equal access to basic health care and basic education for low-income and vulnerable groups and by developing social safety nets to prevent extreme poverty.

The paper argues that the unfinished transition toward a market economy, and the remaining price distortions and administrative interventions in resource allocation, have led to the worsening income distribution in the PRC. Therefore, continued efforts are needed to complete the transition and to eliminate the remaining distortions and administrative interventions. The government should shift its focus from direct interventions in price setting and resource allocation to providing public goods such as health care, education, and social security nets. If the primary distribution emphasizes only efficiency while exclusively relying on redistribution to address the social equity issue, the final outcome could be the loss of both efficiency and equity.

The rest of the paper is organized as follows. Section II presents a theoretical framework of the relationship between growth and equity in developing countries and summarizes evidence from empirical testing. Section III reviews the PRC’s growth experience since the late 1970s, when reforms were initiated, and traces the roots of its current problems. Section IV analyzes the PRC’s current stage of development and provides policy suggestions regarding its future. Section V concludes.
II. DEVELOPMENT STRATEGY AND ECONOMIC PERFORMANCE: THEORETICAL FRAMEWORK

The choice of development strategy determines whether an economy can grow rapidly in a sustainable and equitable manner (Table 1).

Table 1. Effects of Development Strategy on Economic Performance

<table>
<thead>
<tr>
<th>Effects on production and primary distribution</th>
<th>Effects on economic growth</th>
<th>General effects</th>
<th>Comparative-Advantage-Following</th>
<th>Comparative-Advantage-Defying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital accumulation</td>
<td>Fast</td>
<td>Slow</td>
<td>Economic growth at the highest potential speed</td>
<td>Economic growth rate lower than the highest potential speed</td>
</tr>
<tr>
<td>Technological progress</td>
<td>Fast</td>
<td>Technology of priority sectors progress relatively fast in the short-run while technology progresses slowly nationwide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonproduction/squander of resources</td>
<td>Rare</td>
<td>Many resources are depleted in rent seeking and in the competition for government support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on income gaps derived from primary distribution</th>
<th>General effects</th>
<th>Comparative-Advantage-Following</th>
<th>Comparative-Advantage-Defying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase of wage rate relative to return to capital</td>
<td>Fast</td>
<td>Slow</td>
<td></td>
</tr>
<tr>
<td>Market segmentation and convergence of return to factors</td>
<td>No market segmentation; return to factors among different regions and industries will converge</td>
<td>Market segmented by government to support priority sectors, and the return to factors among different regions and industries will not converge</td>
<td></td>
</tr>
<tr>
<td>The reverse transfer payment from poor to rich</td>
<td>None</td>
<td>The rich who are able to invest in the priority sectors enjoy the subsidy while average people pay the tax</td>
<td></td>
</tr>
<tr>
<td>Rent seeking and corruption</td>
<td>Rare</td>
<td>Rampant</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on redistribution</th>
<th>Total amount of resources that can be used in redistribution</th>
<th>Large</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fraction of people who need to be supported by redistribution</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Tax base for redistribution</td>
<td>Wide</td>
<td>Narrow</td>
</tr>
<tr>
<td></td>
<td>Required transfer payment to get the desired income distribution</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Financial sustainability of redistribution</td>
<td>Good</td>
<td>Unsustainable</td>
</tr>
</tbody>
</table>
A. Two Development Strategies

Development strategies can be classified as comparative-advantage-following (CAF) and comparative-advantage-defying (CAD). The CAF strategy involves selecting industries according to the comparative advantage of an economy at each development stage, which is determined by the endowment structure of the economy. For example, at early stages of development where capital is relatively scarce and labor relatively abundant, the comparative advantage lies in labor-intensive industries and labor-intensive segments of capital-intensive industries. As the economy grows, the endowment is upgraded and capital becomes more abundant and labor more scarce; the comparative advantage of the economy then shifts to capital-intensive industries.

Firms in an economy pursuing the CAF strategy tend to be viable, i.e., they make normal profits. The viability of a firm in a marketplace depends on whether its technology choice is consistent with the comparative advantage of the economy (Lin 2003). Obviously, no one would invest in a firm if it is not expected to earn normal profits. Such a firm can only exist if the government supports it financially.\(^1\)

The CAD strategy, on the other hand, involves choosing industries and technologies that defy the comparative advantage determined by the endowment of the economy. Two typical examples of the CAD are developing capital-intensive industries at early stages of development when capital is scarce, and developing labor-intensive industries at advanced stages of development when capital is abundant. Under the CAD strategy, firms in the promoted industries would not be viable. These firms can only be sustained with government subsidies or price distortions and direct interventions in resource allocation.\(^2\)

B. Impacts of Choice of Development Strategy on Efficiency

The efficiency of an economy is determined by the competitiveness of its products in domestic and international markets. According to the “diamond” theory proposed by Porter (1980, 1985, 1990), the competitive advantage of an economy in open domestic and international markets depends on four factors: first, the industrial development in an economy should take advantage of its relatively cheap production factors; second, the industries should command large domestic markets; third, the industries should enjoy benefits of domestic

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\(^1\)Of course, a viable firm may not receive normal profit in an open and competitive market without proper management.

\(^2\)The first type of CAD production is meant to catch up with advanced countries and the second type is meant to protect employment. The former is often observed in developing countries and the latter in developed countries. This paper discusses only the first type, which is the most relevant to the PRC.
industrial clustering; and finally, the domestic markets for industries should be competitive instead of monopolistic. Although there are four determinants of competitive advantage, the key is to choose industries according to the comparative advantage of the economy (Lin and Li 2003).

Under the CAF strategy, firms enter industries in which the economy has comparative advantage, and adopt cost-minimizing technology. Thus, firms can remain competitive, obtain the largest possible market share, and achieve the largest possible surplus/profits. Meanwhile, capital can enjoy the highest possible rate of return. Therefore, economic agents’ incentives to save would be high and this would spur further growth and capital accumulation. The CAD strategy would result in just the opposite outcomes (Chenery 1961, Krueger 1992). Only by upgrading its capital–labor endowment structure to that of developed countries can a developing country attain the industry/technology structure of developed countries. Since the CAF strategy accumulates capital faster than the CAD strategy, upgrading the industry/technology structures would be faster under the former strategy.

With the CAF strategy, developing countries can also benefit by introducing technology from advanced economies at relatively low cost. Developed countries deal with large risks and incur high costs when they invent new technologies. Because of the relatively high cost and slow pace of technological innovation, the capital accumulation of developed countries will lead to diminishing marginal returns. Therefore, the rate of return to capital of developed countries is lower than that of developing countries, and their pace of capital accumulation is also lower than that of developing countries pursuing the CAF strategy. As the endowment structure of developing countries converges with that of the developed countries, their industrial and technological structure and income level would also converge (see Box 1).

C. Impacts of Choice of Development Strategy on Primary Distribution

The development strategy influences not only efficiency and economic performance, but also the equity of the primary distribution (Lin and Liu 2003). The key to equitable development is to ensure that the income of the poor grows faster than that of the rich, so as to narrow the income gap. The only asset of the poor is their own labor, while the main asset of the rich is capital. Therefore, to ensure that the income of the poor grows faster than that of the rich, sufficient employment opportunities should be provided to keep the wages growing faster than returns to capital.
Box 1. SOME DEVELOPMENT STRATEGIES

The theory of dynamic comparative advantage (Redding 1999, Guo 2003) argues that comparative advantage should be perceived dynamically, not statically. The policy prescription is: although some industries and technologies are not consistent with the current comparative advantage, government protection and support would make them competitive in the future through learning-by-doing. However, this is a misinterpretation of comparative advantage. Now that the industrial and technology structures are endogenously determined by the endowment structure, as the endowment structure upgrades, industrial and technology structures will upgrade accordingly. On the basis of dynamic comparative advantage arguments, government distortion of prices needed to develop priority industrial and technology structures will render capital accumulation slower than its potential, and the endowment structure endogenously needed to make the priority industrial and technology structure viable is hard to reach. As a result, the priority industrial and technology structure would always be nonviable, relying on government protection permanently rather than temporarily. This has been proven by the experiences of Brazil, India, Russian Federation, and other countries.

The strategic trade policy, another influential theory, advocates government intervention in industrial and trade policies for the purpose of gaining international competitive advantage. This argument has two principles. First, in the presence of imperfect competition and economy of scale, government could adopt strategic trade policy to make credible commitments to curb the development of foreign enterprises in the same industry and increase the monopolistic profit of home enterprises (Brander and Spencer 1985, Brander 1986). Second, knowledge and technology spillover creates potential market failure. However, many scholars have cast doubt on the effectiveness of the strategic trade policy. Dixit (1986) points out that whether monopolistic profit exists in Brander and Spencer’s theory is questionable. Grossman (1986) contends that in the practice of the strategic trade policy, governments have to choose the “strategic” industry and decide the manner, scope, and magnitude of the support. At the same time, industries with government support compete with other industries for resources, causing the cost for other industries to rise. Therefore, governments have to consider whether the benefits can cover the costs. These decisions require massive accurate information, which is difficult to obtain. The strategic trade policy may be applicable only to developed countries with similar levels of development and endowment structure, but not in the context of developing countries trying to develop capital-intensive industries (Lin and Sun 2003).

Murphy, Shleifer, and Vishny (1989) reignite the interests of “big push” and industrial policies. Their paper shows that government coordination and support are necessary for the establishment of key industries and that the demand spillover from these key industries is pro-growth. We believe that at different stages of development, it is important for governments of developing countries to provide necessary information and help enterprises figure out investment prospects. This is because information is a public good and industrial upgrading is inside the international industrial chain. Governments can play a positive role in collecting and distributing
information. The industrial upgrading of developed countries happens on the frontier of the world industrial chain. What the next profitable industry would be is unknown \textit{ex ante} and has to be explored by trial and error. In these cases, the governments of developed countries do not have any advantage over enterprises. However, governments in developing countries should not distort prices to support industries that are not consistent with the comparative advantage of the economy. The prerequisite for the success of the “big push” is that investment must be in line with the comparative advantage of the economy as determined by the endowment structure. The enterprises have to be viable; otherwise, even if they are set up owing to government intervention, they still need protection and subsidy to survive market competition. Departure from comparative advantage led to the failure of big pushes in developing countries in the 1950s and 1960s. If promoting industries against the comparative advantage in large developing countries is logically correct, then the big pushes in less developed regions of these countries are also logically sound. But it will result inevitably in market segmentation and will hurt the efficiency of resource allocation.

The endowment structure of developing countries is typically characterized by relative scarcity of capital and abundance of labor. Therefore, only by adopting the CAF strategy and encouraging the development of labor-intensive industries and labor-intensive sections of capital-intensive industries can an economy provide as many job opportunities as possible and reach full employment. Thus, the CAF strategy can effectively keep the income gap low in the primary distribution. Moreover, with the CAF strategy, the government does not need to distort the product and factor markets to subsidize nonviable enterprises and to restrict labor migration. In the long run, wage gaps across industries and regions will converge as a result of labor migration.\textsuperscript{3}

If the CAD strategy is chosen and capital-intensive industries are promoted in developing countries, limited investment would create limited job opportunities. As a result, many people with labor as their only source of income would face unemployment and be unable to benefit from economic development. In addition, governments of developing countries often create factor market segmentations to facilitate the development of nonviable firms. This would lead to the widening of income gaps among sectors. Wage rates for the priority sectors would be higher than those of the nonpriority sectors. Subsidies to what are considered the priority industries could result in “reverse transfer payments”, i.e., the poor subsidizing the rich, which in turn increases income differences.

Moreover, to obtain investment funds, nonviable enterprises would try all means to lobby the government, wasting resources in nonproductive rent-seeking activities (Krueger 1974). Once the rule of law and administration fail to operate,\textsuperscript{3}

\textsuperscript{3}Of course, this does not imply absolute convergence. Other factors, such as human capital and health, also affect the wage rate.
corruption would arise. Corruption and “rent seeking” would create a privileged class and the so-called “bad market economy” (Qian 2000).

D. Impacts of Choice of Development Strategies on Redistribution

Governments have the responsibility of supporting (i) people who are not able to participate in the labor force, including the disabled, young children, aged, and temporarily unemployed; and (ii) households whose income levels are below the poverty line. The CAF strategy promotes growth, thus generating more resources for redistribution, while the CAD strategy leads to less resources for redistribution due to its lower efficiency.

Income gaps arising from the primary distribution also influence the marginal tax rate and scale of the required transfer payments in redistribution. If the CAF strategy is followed, income gaps arising from the primary distribution are relatively small, and the marginal tax rate and transfer payments could be kept at low levels. Also, the negative impact on incentives is smaller and taxes are easier to levy. The financial sustainability of the redistribution system could be ensured. Further, the government budget could focus on financing public goods rather than on subsidizing nonviable enterprises.

On the contrary, if the CAD strategy is followed, income gaps arising from the primary distribution would be larger. To narrow the income gaps, the marginal tax rate and transfer payments would have to be high enough to fulfill the government's promises. High marginal tax rates would not only distort incentives, but also encourage taxpayers to evade taxes, making tax collection more difficult. Eventually, high transfer payments promised by the government would not be financially sustainable and the government could lose credibility. If the government has to incur high levels of fiscal deficits in order to finance high expenditure on social security and transfer payments, it will be hard to maintain a stable macroeconomy; high inflation, which hurts the poor, would then be unavoidable.

E. Empirical Evidence

Impacts of the choice of development strategy on the economy have been empirically tested (Lin 2003, Lin and Liu 2003, Lin and M. Liu 2004). The testing involves two steps. In the first step, two technology choice indexes (TCIs) were constructed representing the choice of development strategy: one measuring the deviation of the actual capital–labor ratio of the manufacturing sector of an economy from its optimal ratio, which is determined by the factor endowment of the economy; and the other measuring the deviation of the share of manufacturing value-added in gross domestic product (GDP) from the share of manufacturing
employment in total employment. For both indexes, the smaller the deviation, the closer is the development strategy to the CAF.

In the second step, regression analysis was carried out, with (i) the Gini coefficient regressed against the first index and other conditioning variables (such as the initial level of income inequality, extent of corruption, quality of bureaucracy, and economic openness); and (ii) per capita GDP growth rate regressed against the second index and other conditioning variables (such as the initial income level, rule of law, economic openness, and geographical location).

Based on a panel data set covering 42 countries for 1970–1990, the regression results (Lin and Liu 2003) show that the choice of the development strategy has a statistically significant impact on the level of income inequality: other things being equal, the higher the deviation of the actual development strategy (measured by the actual capital–labor ratio of the manufacturing sector) from the CAF strategy (measured by the capital–labor ratio of the entire economy), the higher the Gini coefficient. Therefore, deviation of the development strategy from the CAF strategy does increase income inequality.

The regression results (Lin 2003, Lin and M. Liu 2004) also show that the choice of the development strategy has a statistically significant impact on growth rate: other things being equal, the higher the deviation of the share of manufacturing value-added in GDP from the share of manufacturing employment in total employment, the lower the country’s per capita GDP growth rate. Therefore, the closer a country’s development strategy is to the CAD, the worse is its growth performance.

III. THE PRC’S DEVELOPMENT STRATEGY AND GROWTH PERFORMANCE

A. Development Strategy and Growth Performance before Reform

The PRC’s development strategy in the 1950s was the typical CAD—one that gave priority to heavy industries. At that time, the PRC was an agrarian economy with scarce capital, but it promoted the development of large and capital-intensive heavy industries. These heavy industries required large amounts of capital to cover the initial investment, had long gestation periods, and needed imported equipment and technologies.

The PRC’s endowment structure at that time had the following characteristics. First, the level of economic surplus was low and capital was in severe shortage, implying that the interest rate, if left to market forces, would be very high. Second, exports were low, and there was a severe shortage of foreign exchange. Third, economic surpluses were widely dispersed, mainly among peasants, and hard to mobilize. Thus, it would have been very difficult to develop viable heavy industries in the context of an open and competitive market.
To support the nonviable industries and projects, the government had to distort product and factor prices and suppress the interest rate to lower the financial costs of heavy industries. To facilitate imports of equipment, the exchange rate had to be distorted. To mobilize economic surplus, enterprises’ profits had to be made artificially high by keeping wages and prices of inputs low and by granting the enterprises monopoly positions. However, distortions of price signals resulted in shortages of credit, foreign exchange, raw materials, and living necessities. To ensure that scarce resources were indeed allocated to the priority industries, the traditional planned allocation system came into play. In the planned system, if an enterprise was in the priority sector, it enjoyed a monopoly position for its overpriced products and obtained inputs at low prices to ensure high profits; if the enterprise was not in the priority sector, prices for its products were artificially suppressed and thus, an enterprise might incur losses even with sound management. Therefore, whether an enterprise made profits or incurred losses did not depend on its management, but rather on where it stood in the industrial chain. In the presence of information asymmetry and incentive incompatibility and the lack of market competition, the government could not know what the normal profit or loss level was. Consequently, nationalization became the institutional arrangement that enabled the government to control the allocation of surpluses (Lin, Cai, and Li 1994 and 2001; Lin and Tan 1999; Lin and Zhang 2006).

Under the Trinity Economic System (i.e., distorted price signal, centrally planned resource allocation, and nationalization of firms) the PRC’s performance was not as good as expected. Annual GDP growth rate during 1950–1973 was 5.0 percent and the per capita GDP growth rate was 2.9 percent, significantly lower than that of the East Asian tigers (Madison 2001). As we have pointed out, the CAD strategy will not lead to declines in the income gap. Under the development strategy prior to the reform, the government, through the planning system, artificially kept the income gap small within the urban areas and within the rural areas. But this equity was accompanied by lower average standards of living since incentives were distorted and growth levels lowered. In addition, the income gap between rural and urban populations was significant. In 1952, the average consumption level of rural residents was CNY65 per year, only 42.2 percent that of urban residents. In 1978, the average consumption level of rural residents was CNY138, only 34.1 percent that of urban residents. In 1980, per capita net income of rural households was CNY191.3, or 43.6 percent of the urban level.⁴

⁴Calculated based on NBSC (1999, 22–3).
B. Gradual Transition, Development Strategy, and Growth Performance since the 1980s

The PRC initiated a market-oriented transition in the early 1980s. During the transition, the viability problem of enterprises in the priority sectors came to the forefront. How the viability problem is addressed is critical to the stability and success of the transition.

1. Launching Gradual Reform

The PRC adopted a gradual transition approach. Wu (2003, 55) described the characteristics of the PRC’s reform as follows:

After some experiments, we found a new way for China’s reform. Increasing enterprise autonomy did not work, and the reform of state-owned enterprises came to be the bottleneck. We maintained the survival of the state sectors and put our strength in the non-state-owned economy to look for new sources of growth. We call this the incremental transformation approach.

A gradual approach makes sense since it is impossible for nonviable enterprises to suddenly become viable in a market place. Under the gradual dual-track approach to reform, productivity of enterprises was raised by improving micro-level incentives, loosening the strict control on resource allocation, and allowing nonstate-owned enterprises (non-SOEs) to enter sectors that were consistent with the economy’s comparative advantage. The non-SOEs that emerged in a competitive market environment are viable. So these measures promoted growth and provided resources to facilitate the transition of nonviable industries. At the same time, support for nonviable SOEs was continued to avoid massive bankruptcies, making it easier for the government to address viability issues. This approach maintained economic and social stability as well as ensured a high growth rate (Lin, Cai, and Li 1994 and 2001).

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Nonviable enterprises cannot survive in open and competitive markets. Therefore, the shock therapy is bound to cause massive bankruptcies and unemployment. Economic crises and social turmoils are unavoidable. Massive bankruptcies and unemployment are unacceptable in any society, and therefore the government had to subsidize nonviable enterprises, leading to the failure of the shock therapy.
2. Deepening the Gradual Transition

As the private sector developed and the economy grew faster, the gradual transition deepened. As capital accumulated and the endowment structure was upgraded, the originally nonviable medium and small SOEs were transformed and were gradually becoming profitable. These firms were privatized and government stopped subsidizing them.

The per capita GDP grew 7.8 times from 1978 to 2005, at an annual growth rate of 7.9 percent. Life expectancy grew from 67.8 years in 1981 to 71.4 years in 2000. Illiteracy dropped from 22.8 percent in 1982 to 6.7 percent in 2000. Infrastructure significantly improved. The length of the railway lines grew from 51,700 kilometers (km) in 1978 to 75,400 km in 2005; the length of highways grew from 89,020 km in 1978 to 1,930,500 km in 2005. The PRC has gradually become one of the most open economies in the world.

Although the gradual dual-track approach has worked well, the completion of the market-oriented transition requires a solution for the viability problem; otherwise, continuing government interventions are unavoidable and associated problems will remain (Lin 2005). Today, various distortions remain in the economy, and they protect several nonviable SOEs. Meanwhile, many provinces are still pursuing the CAD development strategy to different extents, supporting nonviable projects.

C. Transition, Development Strategy, and Growth Performance since Reform: Empirical Analysis

The experiences of economic transition and the changing nature of the development strategy of various provinces provide a good opportunity to test our arguments empirically.
1. Framework for Empirical Analysis

According to the neoclassical growth theory (Solow 1956, Barro and Sala-I-Martin 1992), an economy with a lower initial income level could grow faster than one with a higher initial income level, because of diminishing marginal returns to capital. However, this theory does not take into consideration the impacts of economic structure, determined by the choice of development strategy, on growth. On the basis of our foregoing discussions, a testable hypothesis could be: the more a province’s development strategy deviates from the CAF, the slower is its growth and the larger is the gap between its actual and potential growth rate.

To test this hypothesis, we construct the following equation:

$$y_i = c + \gamma Y_{0,i} + \alpha TCI_i + \beta X_i + \epsilon_i,$$

where the dependent variable $y_i$ is the average growth rate of per-worker GDP in province $i$ from 1978 to 2000; $Y_{0,i}$ is the per-worker GDP of province $i$ in 1978 representing the initial level of development; and $TCI_i$ is the technology choice index of province $i$ measured by the ratio of the capital–labor ratio of its manufacturing industry to the capital–labor ratio of the entire provincewide endowments. $TCI_i$ is a proxy of the choice of the provincial development strategy; $X_i$ is a set of conditioning variables, including the savings rate, growth of labor force, initial level of human capital, and foreign direct investment (FDI) inflows; $c$, $\alpha$, $\gamma$, $\beta$ are to be estimated; and $\epsilon_i$ is a disturbance term. In the foregoing equation, we expect the coefficient $\alpha$ to be negative; that is, the greater the deviation of the actual development strategy from the CAF, the poorer will be the growth performance, as predicted by our theory.

The data used to construct the $TCI_i$ were taken from the Development Strategy Research Group of China Center for Economic Research (2002). Using annual data from 1978 to 1999 for each province, two alternative measures of $TCI_i$ were constructed: one is the arithmetical average of $TCI_i$ for 1978–1999, denoted as TCI7899, and the other is the arithmetical average of $TCI_i$ for 1978–1985, denoted as TCI7885. The second measure intends to capture the characteristics of development strategies of each province in the initial phase of the reform. Among the other variables, the savings rate ($SAVI_i$) is calculated as the average savings rate during 1978–2000, with the numerator being fixed capital and inventory investment and the denominator being GDP. The coefficient of the savings rate is expected to be positive. The coefficient of labor growth rate, $LABG_i$, is expected to have a negative sign. The initial level of human capital, $HUMK82_i$, is defined as the proportion of individuals who had completed
primary school by 1982. It is expected to have a positive sign. FDI is measured in
the natural logarithm of total FDI inflows to each province during 1978–2000.
We expect the coefficient of FDI to be positive. In estimation, the residual in the
above is assumed to be heteroscedastic, that is,

\[ E(e_{3i}) = 0, Var(e_{3i}) = \sigma^2 \zeta_i. \]

Under this assumption, the regressions are carried out using White’s robust
variance-covariance matrix.

2. Results of the Empirical Analysis

Table 2 presents the regression results. Model 1 uses the framework of
neoclassical unconditional convergence. The result does not support the
unconditional convergence hypothesis. Moreover, the adjusted R\(^2\) shows a poor
fit. In Models 2 and 3, we include the development strategy of each province in
the initial stage of reform, TCI7885, and during the whole period of the reform,
TCI7899. From the estimated results of these two models, we see that the higher
the TCI, the slower the growth of per capita GDP. In addition, the coefficient of
the initial per capita GDP (GDPPC\(_0\)) has the expected negative sign.

Models 4 through 8 are based on the framework of conditional
convergence. The coefficients of the TCI in these models are all significantly
negative. However, although the initial per capita GDP has the expected negative
sign, it is not significant in some cases. The signs of other explanatory variables’
coefficients, such as the savings rate, rate of labor growth, and FDI, are all as
expected. However, the statistical significance of these variables is unstable. The
coefficient of the human capital has an unexpected negative sign, and, in some
cases, is highly significant. Of course, we cannot draw a conclusion that human
capital and per capita GDP are negatively related.

The regression results strongly support our hypothesis: a provincial
economy adopting the CAD strategy has a lower growth rate of per capita GDP
than a province adopting the CAF strategy, and this relationship is statistically
significant.
Table 2. Regression Results for the Relationship between the Choice of Development Strategy and Growth in the PRC’s Provinces

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.0703 (0.0290)</td>
<td>0.1807 (0.0587)</td>
<td>0.2267 (0.0502)</td>
<td>0.0746 (0.0478)</td>
<td>0.1281 (0.0503)</td>
<td>0.2123 (0.0474)</td>
<td>0.1413 (0.0497)</td>
<td>0.2258 (0.0477)</td>
</tr>
<tr>
<td>Ln(GDPc0)</td>
<td>0.0003 (0.0042)</td>
<td>−0.0123 (0.0073)</td>
<td>−0.0171 (0.0063)</td>
<td>−0.0039 (0.0053)</td>
<td>−0.0089 (0.0055)</td>
<td>−0.0161 (0.0082)</td>
<td>−0.0087 (0.0052)</td>
<td>−0.0152 (0.0076)</td>
</tr>
<tr>
<td>TCI7885</td>
<td>−0.0042 (0.0017)</td>
<td>−0.0084 (0.0020)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCI7899</td>
<td></td>
<td></td>
<td>−0.0084 (0.0020)</td>
<td></td>
<td></td>
<td></td>
<td>−0.0047 (0.0012)</td>
<td>−0.0071 (0.0021)</td>
</tr>
<tr>
<td>SAV</td>
<td>0.0313 (0.0244)</td>
<td>0.0395 (0.0209)</td>
<td>0.0714 (0.0330)</td>
<td>0.0714 (0.0203)</td>
<td>0.0394 (0.0293)</td>
<td>0.0660 (0.0506)</td>
<td>0.0660 (0.0293)</td>
<td>0.0660 (0.0293)</td>
</tr>
<tr>
<td>LABG</td>
<td>−1.2078 (0.4221)</td>
<td>−1.0894 (0.3777)</td>
<td>−1.1571 (0.4901)</td>
<td>−1.0894 (0.3689)</td>
<td>−0.8746 (0.5323)</td>
<td>−0.8746 (0.5323)</td>
<td>−0.8746 (0.5323)</td>
<td>−0.8746 (0.5323)</td>
</tr>
<tr>
<td>HUMK82</td>
<td>−0.0786 (0.0269)</td>
<td>−0.0855 (0.0249)</td>
<td>−0.0119 (0.0506)</td>
<td>−0.0119 (0.0196)</td>
<td>−0.0087 (0.0424)</td>
<td>−0.0087 (0.0424)</td>
<td>−0.0087 (0.0424)</td>
<td>−0.0087 (0.0424)</td>
</tr>
<tr>
<td>FDI</td>
<td>0.0070 (0.0016)</td>
<td>0.0065 (0.0015)</td>
<td>0.0056 (0.0015)</td>
<td>0.0056 (0.0015)</td>
<td>0.0056 (0.0015)</td>
<td>0.0056 (0.0015)</td>
<td>0.0056 (0.0015)</td>
<td>0.0056 (0.0015)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>−0.0384</td>
<td>0.1214</td>
<td>0.4022</td>
<td>0.5836</td>
<td>0.6330</td>
<td>0.3271</td>
<td>0.6717</td>
<td>0.4715</td>
</tr>
</tbody>
</table>

*significant at 10%; ‡significant at 5%; §significant at 1%.
Adjusted R² = adjusted coefficient of determination; FDI = foreign direct investment; HUMK82 = initial level of human capital; LABG = coefficient of labor growth; Ln(GDPc0) = natural logarithm of initial level of per capita GDP; SAV = savings rate; TCI7885 = technology choice index for 1978–1985; TCI7899 = technology choice index for 1978–1999.

Note: Standard errors, in parenthesis, are the adjusted White’s robust variance-covariance matrix.
Source: Authors’ calculations.
D. Gradual Transition yet to be Completed

1. Remaining Challenges

The PRC is faced with several challenges in maintaining high growth while striving toward an equitable income distribution.

First, the growth of nonagricultural employment is slow. The elasticity of nonagricultural employment with respect to nonagricultural output is low and declining. The employment elasticity for manufacturing since 1991 and services since 1997 were under 0.01 in most years. The slow growth of nonagricultural employment encumbered industrialization in terms of employment structure. In 2006, agricultural output accounted for 11.7 percent of GDP, industry accounted for 48.9 percent, and services for 39.4 percent. In the same year, agricultural employment accounted for as much as 42.6 percent of total employment, industry 25.2 percent, and services 32.2 percent. Although the nonagricultural output share is as high as 88.3 percent, nonagricultural employment share is only 57.4 percent (NBSC 2007). In 2005, nonagricultural employment accounted for 85.6 percent of total employment in upper middle income countries, 96.5 percent in countries of the Organisation for Economic Co-operation and Development (OECD), and 95.4 percent in European Union countries (World Bank 2007). The difference of the share of nonagricultural employment between the PRC and developed economies indicates that the PRC’s rural–urban gap is still large. The slow growth of nonagricultural employment also leads to deadweight loss in allocation efficiency. The labor reallocation from the low-productivity agricultural sector to high-productivity nonagricultural sectors is an important way to generate economic growth. Since 1978, the ratio of nonagricultural labor productivity to agricultural labor productivity first decreased and then increased. In 2006, this ratio was still very high, at 5.6. That nonagricultural labor productivity is much higher than agricultural labor productivity implies that further transfer of labor from agriculture to nonagricultural sectors can increase the total output.

Second, the income gap has widened and poverty reduction remains an important policy issue. The PRC’s Gini coefficient in terms of consumption expenditure was about 0.47 in 2004 and 2.5 percent of the population still lived under the official poverty line. Moreover, 10.8 percent of the population lived under $1 a day after adjusting the income for purchasing power (ADB 2007).

Third, regional disparity has also widened and remains very high. Of the 31 provincial-level administrative regions in 2006, Shanghai had the highest per capita GDP, at CNY57,695; Guizhou had the lowest per capita GDP, at CNY5,787. Excluding the three metropolitan cities of Beijing, Shanghai, and Tianjin, among the 28 provinces, Zhejiang had the highest per capita GDP, at CNY31,874, which is 5.5 times of that of Guizhou.
2. Following the CAF Development Strategy to Promote Harmonious Development

The root of the above problems lies in the fact that market-oriented transition has not yet been completed. To protect and subsidize nonviable SOEs, the government has retained distortions and interventions in the prices and allocation of certain productive factors. The following problems should be addressed to move further away from the CAD development strategy.

The first issue is the distortion in the financial structure. Although significant steps have been taken in reforming the financial system since the 1980s, the PRC’s current banking system and capital market continue to favor the development of large SOEs. Large enterprises, rather than medium and small firms, are able to access the financial market. Small and medium enterprises (SMEs) have difficulty getting the capital they need (Wang 2005). As a result, the development of labor-intensive SMEs has been kept below its full potential.

The second issue is the distortion in prices of raw materials and natural resources. According to the Law of Mineral Resources, mineral resources are state-owned assets. Natural resource taxes and compensation fees have to be paid for mining activities. The current natural resource tax rates are stipulated in the Regulations of Resource Taxes in 1993 (Table 3). Because taxes are levied on the basis of quantity rather than market value of the natural resources, increases in market prices of natural resources and commodities enlarge the differences in profitability between industries, contributing to widening income gaps.

<table>
<thead>
<tr>
<th>Resources</th>
<th>Tax (CNY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude oil</td>
<td>8–30/ton</td>
</tr>
<tr>
<td>Natural gas</td>
<td>2–15/thousand cubic meters</td>
</tr>
<tr>
<td>Coal</td>
<td>0.3–5/ton</td>
</tr>
<tr>
<td>Other nonmetal minerals</td>
<td>0.5–20/ton or thousand cubic meters</td>
</tr>
<tr>
<td>Black metals minerals</td>
<td>2–30/ton</td>
</tr>
<tr>
<td>Colored metal minerals</td>
<td>0.4–30/ton</td>
</tr>
<tr>
<td>Salt</td>
<td>10–60/ton</td>
</tr>
</tbody>
</table>


All mining enterprises were state-owned until the 1980s, when private and foreign enterprises were allowed entry. With the prices of natural resources converging to international levels, these enterprises were able to make huge profits due to low resource tax rates and low replenishing fees. Whoever enters the industry with permission to mine becomes rich immediately. This has contributed to the worsening income distribution, caused rampant rent-seeking activities, and led to recurrent mining accidents due to the entry of unqualified miners. Moreover, the low resource tax rates and replenishing fees have caused
oversupply of these mineral products and overinvestment in downstream heavy chemical refining.

The third issue is administrative monopoly. In addition to providing low-interest loans, the government grants SOEs monopoly power by restricting market entry. Many enterprises participate in rent-seeking activities to lobby for low-interest loans and permission for entry, and thus, corruption becomes inevitable.

Fourth, due to their growing economic power and the fiscal management arrangements, local governments have very strong incentives to promote short-run economic growth. Zhou, Li, and Chen (2005) used data from 1979 to 2002 to investigate the nature of promotion mechanisms for provincial officials and found that short-run economic growth has a positive effect on the likelihood of promotion. This may have encouraged the pursuit of the CAD development strategy and development of nonviable enterprises at the provincial level. For example, many local governments are promoting the development of heavy chemical industries, which may not be consistent with the local comparative advantage. Local governments provide subsidies to these firms indirectly by lowering land prices and taxes. Empirical studies show that the pursuit of the CAD strategy has contributed to the regional disparity in the PRC (Lin and Liu 2006).

IV. CURRENT STAGE OF DEVELOPMENT
AND THE ROAD AHEAD

A. Current Development Stage

The PRC has experienced three decades of rapid economic growth. Premier Wen Jiabao (2007, 2) pointed out that “China’s productivity level far lagged behind developed countries when it started its socialist efforts. We need a long period of time to achieve industrialization and modernization. Since the reform, the productivity and performance of the economy has increased dramatically and people’s living standard has improved significantly. Nevertheless, the PRC has a large population and poor industrial base with wide rural–urban gaps and regional disparity. The low productivity has not changed

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6The CAD development strategy in a province not only affects its long-run economic performance, but also negatively affects the efficiency of resource allocation at the national level. Support for nonviable industries has led to regional market segmentation and protectionism (Lin and P. Liu 2004). This reduces resource allocation efficiency. A survey shows that regional market segmentation and protectionism still exist (Li et al. 2004). The distortion of resource allocation due to regional protectionism and market segmentation has resulted in losses ranging from 5 percent (Liu 2005) to 20 percent (Zheng and Li 2003) of the actual output in 2000.
essentially.” We believe this is a sound assessment of the PRC’s current development stage.

Cross-section comparisons are helpful in understanding the PRC’s current stage of development. According to World Bank data, the PRC’s per capita gross national income (GNI) was $1,740 in 2005, ranking 128th among 208 economies. Adjusted by purchasing power parity (PPP), its per capita GNI was $6,600, ranking 107th among 208 economies. Under both measures, the PRC’s GNI was below the world average. As presented in Table 4, using the market exchange rate, the PRC’s per capita GNI was lower than $1,989, the mean income of low and middle income countries, and was only 4 percent of the United States level. Adjusted by PPP, the PRC’s per capita GNI was only slightly higher than the average of low and middle income countries at $6,313, and was 15.7 percent of the United States level.

<table>
<thead>
<tr>
<th>Economy</th>
<th>Per Capita GNI</th>
<th>Per Capita GNI (PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>1,740</td>
<td>6,600</td>
</tr>
<tr>
<td>Japan</td>
<td>38,980</td>
<td>31,410</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>15,830</td>
<td>21,850</td>
</tr>
<tr>
<td>Germany</td>
<td>34,580</td>
<td>29,210</td>
</tr>
<tr>
<td>Great Britain</td>
<td>37,600</td>
<td>32,690</td>
</tr>
<tr>
<td>United States</td>
<td>43,740</td>
<td>41,950</td>
</tr>
<tr>
<td>World average</td>
<td>6,987</td>
<td>9,240</td>
</tr>
<tr>
<td>Low-income countries</td>
<td>580</td>
<td>2,486</td>
</tr>
<tr>
<td>Middle-income countries</td>
<td>2,640</td>
<td>7,195</td>
</tr>
<tr>
<td>Lower middle-income countries</td>
<td>1,918</td>
<td>6,313</td>
</tr>
<tr>
<td>Upper middle-income countries</td>
<td>5,625</td>
<td>10,924</td>
</tr>
<tr>
<td>Low and middle-income countries</td>
<td>1,746</td>
<td>5,151</td>
</tr>
<tr>
<td>High-income countries</td>
<td>35,131</td>
<td>32,524</td>
</tr>
<tr>
<td>East Asia and the Pacific</td>
<td>1,627</td>
<td>5,914</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>4,113</td>
<td>9,142</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>4,008</td>
<td>8,111</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>6,076</td>
<td>2,241</td>
</tr>
<tr>
<td>South Asia</td>
<td>684</td>
<td>3,142</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>745</td>
<td>1,981</td>
</tr>
<tr>
<td>European Union</td>
<td>31,914</td>
<td>28,958</td>
</tr>
</tbody>
</table>

GNI = gross national income; PPP = purchasing power parity; PRC = People’s Republic of China.

Table 5 presents a simple projection of the PRC’s per capita GNI in 2020. Even in the optimistic case, which assumes that the GNI remains at an annual rate of growth of 10 percent from 2006 to 2020, and that the yuan appreciates by 30 percent in 15 years, per capita GNI will only reach $8,634 in 2020.
Achieving Equity and Efficiency Simultaneously
in the Primary Distribution Stage 53

Table 5. A Simple Projection of the PRC’s Stage of Development in 2020

<table>
<thead>
<tr>
<th>Assumed Annual Growth Rate for 2006–2020 (percent)</th>
<th>2005 GNI ($ billion)</th>
<th>2020 GNI ($ billion)</th>
<th>2020 Population (million)</th>
<th>2020 Per Capita GNI ($)</th>
<th>2020 Per Capita GNI with CNY Appreciation of 30% ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6,245.96</td>
<td>4,386.52</td>
<td>5,702.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>7,181.24</td>
<td>5,043.36</td>
<td>6,556.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>8,245.94</td>
<td>1,423.90</td>
<td>5,791.10</td>
<td>7,528.43</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9,456.56</td>
<td>6,641.31</td>
<td>8,633.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GNI = gross national income.
Sources: GNI in 2005 is from World Bank (2007); population in 2020 is from World Bank (2006, 46).

B. Choice of Development Strategy in the Near Future

The foregoing analysis establishes that the PRC is still at a relatively low level of development. The endowment structure with scarce capital and abundant labor has not changed.

At the current stage of development, the viable enterprises are relatively labor-intensive, not overly capital-intensive. The development of relatively labor-intensive industries or labor-intensive segments in capital-intensive industries can promote high and sustained growth and capital accumulation and can create maximum possible nonagricultural employment opportunities; drive wages to increase faster than capital returns do; and narrow income gaps and reduce poverty, thus realizing efficiency and equity in the primary distribution stage. At the same time, the PRC should make sure that the social security and transfer payment systems are financially sustainable.

At the current stage of development, the PRC should not develop overly capital-intensive industries against its comparative advantage, because the CAD strategy hurts growth and widens income disparity in the primary distribution. The redistribution system cannot be solely relied on to address the equity issue. If redistribution is used as the main measure of narrowing the income disparities while keeping the CAD strategy, the government would have to raise the marginal tax rate above the optimal level, with either of two possible consequences. First, if tax collection is efficient, then a high marginal tax rate dampens the incentives of taxpayers to report true earnings and reduces the actual tax base. The promised high welfare and transfer payment cannot be realized. Second, if tax collection is not efficient, the promised high welfare and transfer payment also cannot be realized, and the government may lose its credibility. If the government uses fiscal deficits to pay for social security and transfers, the stability of the macro economy will be at stake and inflation will be unavoidable. Inflation hurts economic growth and affects the middle- and low-income group most severely.
C. Policy Suggestions in the Short Run

1. Suggestions for the Primary Distribution

First, the PRC should promote the development of labor-intensive small and medium manufacturing and service enterprises. The bottlenecks to development of SMEs are access to credit and market entry. In a market economy, the optimal financial structure is endogenous to the stage of development (Lin 1999). Currently, the most appropriate financial structure is one dominated by small and medium banks, because they are better than larger banks at providing financial services to SMEs (Lin, Sun, and Jiang 2006). However, the PRC’s current financial structure is focused on big banks and the stock market. Thus, private SMEs find it difficult to acquire necessary financial services. Therefore the PRC should improve the financial structure by developing regional small and medium financial institutions with various ownership structures that are able to provide financial services to SMEs.

Second, the PRC needs to deepen the reform of large SOEs and eliminate price distortions and administrative monopolies to make the market system operate more efficiently.

Third, the PRC should introduce competition in monopolistic industries. The experience of telecommunication industries in Hong Kong, China and the United States shows that the introduction of competition helps promote innovation and decrease monopoly profit and income differences.

Finally, the PRC should modify the incentives of local governments to encourage them to choose the CAF production mode at the provincial level.

2. Suggestions for Redistribution

First, the PRC should encourage rather than hinder the unification of the labor market. Currently, different regions set their standards of social security according to their own level of economic development, causing large regional differences in the level of social security coverage. Advanced regions are then reluctant to absorb labor from other regions. As the current situation is not conducive to a nationwide unified labor market, the social security arrangement should be reformed.

Second, the PRC should establish a development-oriented, instead of a consumption-oriented, public expenditure structure. The impact of public spending on sectors such as education (which promotes the formation of human capital and increases the wage rate of an average worker) on economic growth and on equity is more direct than that of government administrative expenditures. Hence, government administrative expenditures should be reduced and excessive expansion of government buildings and offices should be controlled; on the other
hand, development expenditures should be increased, especially on education. Education enhances the skills base of the labor force and helps prevent income gaps from persisting from one generation to another.

Third, social safety nets should be developed to provide support for disadvantaged groups that do not have the ability to work. Individuals of such groups have difficulty getting jobs and incomes from primary distribution and need government support through redistribution, including social welfare spending programs and transfers. Key principles of the social safety nets should be to ensure, first, that the limited resources are effectively used for the intended purposes and the disadvantaged groups are the real beneficiaries; and, second, that the system is fiscally sustainable.

VI. CONCLUSION

The CAF development strategy promotes growth and narrows the income gap, achieving both equity and efficiency in production and income distribution. The equitable development goal can be further realized with appropriate social security and transfer payment policies. A review of the three decades of reform reveals that development in line with the PRC’s comparative advantage accounts for the PRC’s remarkable economic achievements. The dominant causes of the PRC’s current problems are the remaining distortions and government interventions in finance, resource allocation, and market entry. Therefore, to put the “scientific development outlook” into practice and to realize development with quality and speed, the PRC should deepen market-oriented transformation by eliminating these distortions and interventions.

REFERENCES


