A COMMENT ON THE ESTIMATING MODEL

As noted in Chapter Three, the estimating model we use is set forth in Appendix A. Estimates of the key input variables and model parameters are derived from multiple official and nonofficial unclassified data for the 1980–1998 period. The forecasts use the calculated mean parameter values or their time trends, or adjust these calculated values based on the authors’ explicit reasons for doing so.¹

The estimates presented for each country are in 1998 U.S. dollars. For each country, the original calculations are in terms of constant 1995 values in local currencies, which are then converted to 1998 U.S. dollar values using the latest Penn World Tables (version 5.7) through the mid-1990s, estimated for both nominal exchange rates and purchasing-power-parity values. Adjustments in the 1995 nominal exchange rates are based on the separate PPP values for the gross national products of each country and for the capital goods component of their GDPs—the latter serving as a proxy for the PPP rates applicable to military investments.

JAPAN

As noted in the preceding discussion of Asia’s financial troubles, Japan’s economic problems are structural rather than cyclical. This implies that changes will continue to be difficult and slow. In turn,

¹See Appendix B.
our forecasts for Japan are heavily influenced by the record of the 1990s and envisage only a gradual improvement in that record from 2000 to 2015.

The structural aspects of the Japanese economy that constrain its resurgence include the following:

- An industrial system principally driven by considerations of scale, market share, and exports; profitability has typically been viewed as less important in resource allocation and in the development of industries and firms.

- A banking system still pervaded by nonperforming and otherwise fragile loans resulting from this distorted industrial base and the credit misallocations associated with it.

- A regulatory system marked by the heavy hand of government, limiting free entry and market access both within the Japanese economy and from potentially competitive firms outside of it, in the process tending to stifle entrepreneurship and innovation.2

- Perverse demographic trends resulting in a rapidly aging population, a declining ratio between Japanese of prime working ages and retirees, and a highly restrictive immigration policy that precludes one possible source of relief from these trends, while continued social constraints on women in the work place inhibit another.

To mitigate these structural difficulties, Japan has embarked on three principal reform policies: loosened monetary policies that include government bailout funding for the major banks, thereby strengthening their balance sheets and facilitating new lending; increasing levels of public spending (in the process, further expanding Japan’s large public debt, which is already larger than its GDP); and providing a

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2These structural rigidities are reflected in recent work at RAND which attempts to measure the relative degree of economic “openness” of different economies. One of the principal findings is that the economy of Japan ranks far below the economies of the United States and Germany (the latter as a proxy for the European Union—EU), and is roughly similar to China and Korea in terms of the nontariff barriers to economic openness that permeate the economy and impede market access by foreign businesses. See Charles Wolf, Jr., Hugh Levaux, and Daochi Tong, Economic Openness: Many Facets, Many Metrics. Santa Monica, Calif.: RAND, MR-1072-SRF, 1999.
modest degree of deregulation (for example, in financial services), and allowing foreign investors to acquire Japanese assets in some fields.

Most observers, including the authors of this report, believe these efforts are insufficient to deal with the economy’s fundamental problems. Without more drastic deregulation, Japan’s near stagnation is likely to continue.

Yet, Japan is hardly in a “crisis” condition. Its per-capita GDP remains among the highest in the world. Sales of luxury consumer goods carrying the prestige labels of Vuiton, Gucci, and Hermes continue to rise. Japan’s current account surplus (about $120 billion at an annual rate in 1999), and its foreign exchange reserves (over $225 billion) are the world’s largest. Although protracted stagnation has doubled Japan’s unemployment rate (to about 4.6 percent), this is less than half that prevailing in the European Union.³ Under these circumstances, Japan’s political system and its successive leaderships remain reluctant to expose the economy to the disruptive stimulus of genuinely opening its economy to competition from abroad as well as from potential entrepreneurial activity at home.

Several key aspects of Japan’s recent economic data are important both for understanding these structural problems and for providing a basis for the forecasts summarized below:⁴

- From 1990 to 1995, the ratio of public to private capital formation steadily increased from 33 percent to 57 percent, and this trend continued in the latter part of the 1990s.

- Over the same period, the absolute level of private capital formation declined by 12 percent (from ¥85 trillion to ¥75 trillion, in constant 1995 prices), while capital formation in the public sector increased by 50 percent (from ¥28 trillion to ¥43 trillion). The same pattern has persisted through the second half of the 1990s.

³Admittedly, unemployment rates in Japan and the EU are not strictly comparable, among other reasons because of the long-standing and extensive unemployment entitlements in the EU, but not in Japan.

⁴The points made in the text are all derived from the Japan Statistical Yearbook, 1998 (Tokyo, Japan, and additional data provided in the Ministry of Finance’s web page http://www.mof.go.jp/english).
The incremental capital/output ratio increased from 2.3 in the period from 1980 to 1985, to 3.7 from 1985 to 1990, to a strikingly high figure of 15.8 in the 1990–1995 period.

Again, in the same period, the labor share in national income increased monotonically from 60 to 67 percent in terms of income at market prices, and from 67 to 73 percent in terms of factor cost; hence, the capital (nonwage income) share has correspondingly declined.

To be sure, these data on capital formation and income shares can be interpreted in both counter-cyclical and in structural terms. The counter-cyclical interpretation for the declining level of private capital formation follows from Japan’s protracted stagnation: Incentives for private investment have diminished, and government spending on infrastructure and other public programs has been rising in an attempt to stimulate the economy. The alternative structural interpretation is that productivity and profitability of private investment in Japan have been largely confined to export sectors, while they have been declining for domestic production and service sectors. Contributing to these declines have been impediments to entry by new firms, absence of or limited access to venture capital, and scarcity and lack of openness and credit for new entrepreneurs. Both the cyclical and structural interpretations are relevant. However, the protracted character of the several indicators strongly suggests that the principal explanation is structural rather than cyclical—cyclical stagnation typically does not endure for a decade.

Finally, annual total factor productivity (TFP) growth between 1980 and 1995 averaged 0.5 percent; from 1985 to 1990 annual TFP growth was 1.4 percent, while from 1990 to 1995 the corresponding TFP growth figure was negative 2.1 percent! In turn, this sharp decrease in factor productivity contributes to the decreased ratio of private capital formation to public capital formation, and the increased capital/output ratio mentioned earlier.

Table 6 summarizes our estimates for the four key variables (GDP, per-capita GDP, military spending, and military capital), covering the period from 1995 through 2015. All of the estimates are in 1998 U.S. dollars, evaluated in terms of nominal exchange rates, purchasing-
power-parity rates, and, in the case of military capital, in terms of the purchasing power of the yen for investment goods.

The information summarized in Table 6 is also presented graphically in Figures 5–8.

Several critical assumptions, on which the forecasts summarized in Table 6 and Figures 5–8 depend, should be highlighted:

• The forecasts include the judgment that the key total factor productivity parameter ($\tau$), while rising from the negative figure of −2.1 percent per year in the mid-1990s, will improve only slightly in the next decade, reaching a positive 0.4 percent annual figure in the period 2010–2015. This judgment assumes that the pace of deregulation and reform in Japan will be slow and partial, largely for political and social rather than economic reasons. If this assumption turns out to be wide of the mark, and major liberalization occurs rapidly, the forecast for Japan would be considerably increased.

• Japan’s military spending is assumed to remain at 1.1 percent of GDP. This assumption may be sensitive to the progress of defense spending and military modernization in China, as well as to the unpredictable behavior of North Korea. Either of these external conditioning factors could plausibly trigger an increase in Japan’s military spending.

If the uncertainties embedded in these assumptions evolve differently from our prognoses, the outcomes could diverge appreciably from the forecasts.

We have also assumed that the rate of depreciation of military capital accumulated up to and including 1994 is 10 percent annually, while more-recent military investment from 1995 to 2015 would depreciate at an 8 percent annual rate. The rationale for these assumptions is that advances in military technology (including the “revolution in military affairs”) tend to accelerate obsolescence of older economic systems, thereby warranting a higher depreciation rate for military capital accumulated prior to 1994.

Given the foregoing assumptions, several key points can be drawn from Table 6 and Figures 5–8.
Table 6
Japan Trends, 1995–2015

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<td>5,540</td>
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</tr>
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<td>23.3</td>
<td>24.4</td>
<td>26.3</td>
<td>28.7</td>
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<td>Military spending (billions of 98$)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>XR</td>
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<td>69.1</td>
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<td>39.9</td>
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<td>Military capital (billions of 98$)</td>
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<td></td>
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<td>XR</td>
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<td>149.7</td>
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<td>165.8</td>
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<td>83.2</td>
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<td>84.1</td>
<td>89.2</td>
</tr>
<tr>
<td>PI</td>
<td>124.4</td>
<td>111.5</td>
<td>107.4</td>
<td>112.2</td>
<td>118.9</td>
</tr>
</tbody>
</table>

SOURCES: Japan Statistical Yearbook, 1998; Defense of Japan, 1998; Penn World Tables (preliminary 5.7).

NOTES: The calculated parameter variable for $\tau$ (total factor productivity) is 1.4 percent/yr for 1985–1990, and –2.1 percent/yr for the 1990–1995 period. In the forecasts shown, the value of $\tau$ for 2000–2005 is –1.0 percent/yr, for 2005–2010 $\tau$ = 0.0 percent/yr, and for 2010–2015 $\tau$ = 0.4 percent/yr. The labor (wage) parameter $\alpha$ is set at 67 percent, the rate of growth of civilian capital stock (Kdot/K) varies between 3 percent and 5 percent/yr, and the rate of growth of employed labor (Ldot/L) varies between 0.3 percent and 0.4 percent/yr—both of these parameter values represent a slight increase from the corresponding levels prevailing in the mid-1990s in Japan. The varying growth rate of civilian capital stock (Kdot/K) excludes residential construction because Japan's base year (1975) capital stock figures did not include the stock of residential capital. The military spending share of GDP ($\gamma$) is set at 1.1 percent, and the military investment share of military spending ($\pi$) is set at 21 percent. In the estimates shown, depreciation of the military capital stock is assumed to be 10 percent/yr for military capital accumulated up to 1994, and 8 percent/yr for military capital accumulated after 1995 and through 2015. See also Appendix B.
Figure 5—Japan Trends: GDP

Figure 6—Japan Trends: GDP Per Capita
Figure 7—Japan Trends: Military Spending

Figure 8—Japan Trends: Military Capital
First, it makes a great difference whether we calculate these four variables in terms of nominal exchange rates, purchasing-power parity in the aggregate, or, in the case of military capital, purchasing-power parity for investment goods. For Japan, the PPP value of the yen used in our estimates is 87 percent less than its nominal exchange value, while the purchasing-power parity of the yen for investment goods is only 48 percent less than that of the nominal exchange rate. Consequently, our estimate for GDP in Japan in 2015 is $6.8 trillion in terms of 1998 dollars using the XR conversion rate, while the corresponding figure is only $3.6 trillion if PPP rates are applied.

Second, the forecasted annual growth rate for the Japanese economy in the period 2000–2005 is just below 1 percent, increasing to 1.56 percent in the 2005–2010 period, and to 1.62 percent for the following five-year period.

Third, over the 15 years covered by these forecasts, per-capita GDP in Japan rises from about $44 thousand to $54 thousand in XR terms, or from $23 thousand to $29 thousand in terms of PPP.

Fourth, for military spending, the estimate for 2000 is approximately $61 billion rising to $75 billion in 2015 in XR terms, and from $33 billion in 2000 to $40 billion in 2015 in PPP terms.

Finally, the military capital figures are estimated in terms of three different conversion rates: nominal exchange rates, purchasing-power parity in the aggregate, and purchasing-power parity of the yen for investment goods. Most Japanese military systems are purchased at prices reflecting world market prices in dollars, or at yen prices reflecting those of investment goods, rather than of consumption goods. Consequently, the purchasing-power parity for investment goods is probably the most reliable of the three estimates. On this basis, Japan’s military capital stock can be expected to increase from about $112 billion in 2000 to $119 billion in 2015, based on the assumptions we have made about accelerated depreciation of the systems acquired before 1994, and the lower depreciation rate for systems acquired thereafter. Once again, these estimates exclude the

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5 According to the most recent (1994) estimates in the Penn World Tables (5.7 preliminary version) the XR, PPP, and PI values are ¥95, ¥176, and ¥139, per U.S. dollar, respectively.
possible interactive effects of developments in China as well as in 
North Korea that might significantly alter Japanese priorities with re-
psect to resource allocations for the military.  

CHINA

Before summarizing the forecasts for China, several key assumptions 
underlying the GDP estimates should be noted.  We have adjusted the 
official GDP statistics because of a belief that the State Statistical Bu-
reau (SSB) has substantially underestimated the size of China’s GDP 
and significantly overestimated its growth rate.

Underestimation of GDP in the official statistics results from the in-
complete statistical coverage of economic activities in the service 
sector and in rural areas, especially in earlier years.  Examples include 
services in the informal economy that are provided by traders, 
carpenters, repairs persons, alternative medicine practitioners, and 
private lenders.  Such activities and businesses proliferated as the

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6Several salient differences between the forecasts made in our earlier work (Wolf et al., 
1995) and those shown in Table 6 and Figures 5–8 should be noted. First, the current 
forecasts are expressed in 1998 dollars, using both nominal exchange rates and real 
purchasing-power-parity rates, while the earlier estimates were expressed in 1994 
dollars using only PPP for conversion from the Japanese yen. Second, the yen’s PPP 
value used in our current report is approximately 15 percent higher than that used in 
the earlier work, and the U.S. GDP deflator rose by 8 percent between 1994 and 1998; 
hence, expressing our results in 1998 dollars boosts the estimates expressed in 1994 
dollars in the earlier work. Third, while the earlier work forecasted an average annual 
growth rate for the Japanese economy of 2.5 percent in the period from 2000 to 2015, the 
current forecasts envisage average annual growth of only 1.4 percent over this period. 
Moreover, the growth trajectory in the earlier work was slightly downward, while the 
growth trajectory in the current work is slightly upward. The explanation for these 
differences essentially lies in the sources and duration of Japan’s protracted stagnation, 
as discussed earlier in the text above. Fourth, the GDP estimates in our current work 
are slightly lower than the corresponding estimates in the earlier work, netting out the 
ofsetting effects of slower growth over the 1994–2000 and 2000–2015 periods on the one 
hand, and the factors mentioned above that tend to raise the estimates, on the other. 
Fifth, estimates of per-capita GDP and of military spending shown in the tables and 
figures above are also slightly below those shown in our earlier work, for the same 
reasons noted in the fourth point above. And finally, our current forecasts of military 
capital are appreciably below those shown in our earlier work, for several reasons 
additional to those mentioned above: use of a lower parameter for new military 
investment as a percentage of military spending (21 percent versus 27 percent in the 
earlier work) (see Defense of Japan, 1998, Tokyo, for the 21 percent estimate), and higher 
annual rates of depreciation in the current forecasts compared with those in the earlier 
1995 work.
The economy evolved from a planned to a market system. To evade taxation, their output and income have not been fully reported. Another area of undercoverage is farm output and consumption in kind, due to underreporting of farm land. And a third missing item is rural consumption of noncommercial energy sources such as fuel wood, biogas, and grain stalks.

Another reason for adjusting the official GDP statistics is the undervaluation of certain output and services, including subsidized housing, medical services, education, transportation, and utilities provided to urban residents; artificially low interest rates charged to state-owned enterprises; and home consumption of farm products valued at procurement prices below market prices. While there is also some overestimation of certain components of GDP, such as the output of rural industries, on balance the official GDP statistics are probably still too low.

Estimates of the extent of this underestimation vary widely, covering a range of 16 to 55 percent above the official figure. In our estimates, we assume that the undervaluation is 34 percent, which is the figure used by the World Bank and Angus Maddison.7

There are also convincing reasons to believe that the official GDP growth rates have been biased upwards. These include the following contributing factors:

- The deflators used by the SSB to convert nominal to real GDP growth have been too low (for example, the factor price index rose much faster than the implicit deflator for gross value of industrial output in the 1990–1997 period).8
- An upward bias is introduced into the aggregate output index as a result of the relatively slower growing state sector being underweighted in the index. This underweighting occurs because many of the state sector’s products and services, such as energy, steel, grain, and transportation, were still under state control at levels

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far below market prices when the output index was structured, while the products of the nonstate sector were sold at higher market prices, thereby acquiring a higher weight in the index. Assigning an inappropriately smaller weight to the slower growth state sector has resulted in a faster GDP growth than if a more appropriate larger weight were used.

- Finally, sometimes industrial growth has been deliberately inflated by using current instead of constant prices, and occasionally by false reporting.

The projections for the two China scenarios for the four key indicators (GDP, per-capita GDP, military spending, and military capital), for the 1995–2015 period, in both nominal and real exchange rate conversions to 1998 U.S. dollars are shown in Tables 7 and 8, and in Figures 9–12 for the stable-growth scenario.

### Table 7

**China Trends, 1995–2015: Stable-Growth Scenario (A)**

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<td>GDP (billions of 98$)</td>
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<tr>
<td>XR</td>
<td>910</td>
<td>1,206</td>
<td>1,532</td>
<td>1,937</td>
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<td>4.8</td>
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<tr>
<td>Per-capita GDP (thousands of 98$)</td>
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<tr>
<td>XR</td>
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<tr>
<td>PPP</td>
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<td>120–180</td>
<td>152–228</td>
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<td>63</td>
<td>69–78</td>
<td>84–106</td>
<td>106–138</td>
<td>135–182</td>
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</table>

NOTES: See Appendix B; parameters: $\tau = 1–1.5\%/yr$, $\alpha = 0.6$, $\gamma = 2–3\%$, $\pi = 25–32\%$, $\delta = 8–10\%/yr$, $LdotL = 1–1.2\%/yr$, $KdotK = 8–9\%/yr$. 


Table 8
China Trends, 1995–2015: Disrupted-Growth Scenario (B)

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<td>6,808</td>
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<tr>
<td>Per-capita GDP (thousands of 98$)</td>
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</tr>
<tr>
<td>XR</td>
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<td>PI</td>
<td>217</td>
<td>238</td>
<td>281</td>
<td>333</td>
<td>386</td>
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</table>

NOTES: See Appendix B; parameters: $\tau = 0–1\%$, $\alpha = 0.6$, $\gamma = 2\%$, $\pi = 25–32\%$, $\delta = 8–10\%/yr$, $LdotL = 0.8–1.1%/yr$, $KdotK = 4–8%/yr$.

The parameters used in the projections shown in Tables 7 and 8 are summarized in the notes to those tables. These parameters reflect both recent and current values, as well as our judgments about several major uncertainties in China’s economic and military future:

- China faces numerous political and social problems, including intraparty disputes over key economic policies (e.g., the pace of economic reform); opposition of local governments, ministries, and departments to central government policies; ethnic succession (e.g., Xinjiang and Tibet); rural unrest, as a result of a widening gap in income distribution; protests of workers who become unemployed; and a general public disgust with widespread corruption.

- China’s economy also confronts serious internal problems, including uneven regional development, blockades of regional trade by some provinces, the lagging pace of reform of state-owned
enterprises, and the piecemeal reform of the financial sector—all contributing to slower growth of productivity and GDP.

• Additional uncertainties relate to the external environment: For example, the economic conditions and trade policies of the United States, the European Union, Japan (which are the major markets for China’s exports and the major sources of capital and technology transfer), and of other Asia-Pacific countries, which both compete with as well as complement China’s exports; and possible military conflicts that might directly or indirectly involve China.

In the light of these and other uncertainties, we postulate two possible scenarios for the 1995–2015 period. The Stable-Growth Scenario (A) assumes that China has at least modest success in dealing with its short-term and long-term problems. Reform of the SOEs and the financial system proceed steadily, and the basic institutions necessary for an efficient market economy continue to make progress. No major political or social upheavals occur, nor are there any major military conflicts involving China. In this benign scenario, the United States and European economies encounter no major recessions, and Japan and other Asian economies continue on the road to recovery. Inflows of foreign capital, technology, energy, and other essential imports continue without disruptions or sharply rising prices.9

By contrast, the Disrupted-Growth Scenario (B) posits an economy caught in a vicious circle. Strong opposition to reforms by political ideologues and interest groups obstructs government efforts to further liberalize the economy. Continued subsidies to the SOEs deprive the more-productive enterprises of resources and continue to cripple the financial system. Consequently, economic growth slows as more and more resources are being used less productively. The economic slowdown worsens the unemployment situation, and political and social unrest ensue. Political and social instability oblige the government to postpone reforms, perpetuating the unproductive use of resources.

9It should be noted that similarly benign economic circumstances are also assumed for the other country forecasts, although our estimates do not take international transactions directly into account.
Figure 9—China Trends, 1995–2015: GDP (Scenario A)

Figure 10—China Trends, 1995–2015: GDP Per Capita (Scenario A)
The differing assumptions about the future embodied in scenarios A and B are translated into specific parameters for the rates of growth of capital, labor, and total factor productivity applying to each scenario.\footnote{See Appendix B.}

The forecasts summarized in Tables 7 and 8 and Figures 9–12 assume a transitional phase between 1995 and 2000, in which civilian capital stock grows at about the same level as in the recent past (9 percent), employed labor also grows at about the recent rate (1.2 percent per year), and total factor productivity grows (1.5 percent per year) slightly below that in the pre-1995 period. Thereafter, the three key parameters continue to apply in Scenario A, where stable growth is maintained, but are substantially reduced in Scenario B, where growth...
is disrupted. The precise values of the parameters are indicated in the notes to Tables 7 and 8 and are explained in Appendix B.11

The parameter γ, representing the proportion of GDP devoted to military spending, is allowed to vary between 2 and 3 percent in Scenario A and is pegged at 2 percent in Scenario B. This parameter value is based on an adjustment for missing items in the official defense budget that are carried in the budgets of other ministries as well as possible additional support from other sources. The share of military investment in military spending is assumed as 32 percent, in terms of constant local currency (yuan) prices, reflecting China’s recent and planned concentration on military modernization at the expense of force size.12 This share shrinks to 24.5 percent when conversion to U.S. dollars is made using the purchasing-power parity for investment goods, rather than the nominal exchange rate. The reason for this adjustment is that the price of investment goods (which, as noted earlier, we use as a proxy for the prices of military investment goods) is relatively higher than the price of consumption goods and services in the Chinese economy. Consequently, when the PI adjustment is made to allow for these relatively higher prices

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11 The following table compares the annual GDP and parameter growth estimates made by the Chinese Academy of Social Sciences (CASS) for the 1975–1990 period, and by the World Bank for the 1978–1995 period, with those appearing in RAND’s prior work and in the current study.

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<tbody>
<tr>
<td>GDP</td>
<td>8.4</td>
<td>8.2</td>
<td>4.9–5.8</td>
<td>2.7–5.0</td>
</tr>
<tr>
<td>Capital</td>
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<td>7.9</td>
<td>8.0–9.0</td>
<td>4.0–8.0</td>
</tr>
<tr>
<td>Labor</td>
<td>2.9</td>
<td>2.4</td>
<td>1.1–1.2</td>
<td>0.8–1.2</td>
</tr>
<tr>
<td>TFP</td>
<td>2.5</td>
<td>3.5</td>
<td>1.0–1.5</td>
<td>0–1.5</td>
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<tr>
<td>Labor share</td>
<td>52.9</td>
<td>60.0</td>
<td>60.0</td>
<td>60.0</td>
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</table>


NOTE: The cross-hatching indicates the effects on military investment and military capital of varying the GDP share of military spending between 2 percent and 3 percent annually.

Figure 12—China Trends, 1995–2015: Military Capital (Scenario A)

of investment goods, the proportion of military investment in military spending (and also, for that matter, in GDP) shrinks.

Several salient points emerge from Tables 7 and 8 for Scenarios A and B, and Figures 9–12 for Scenario A.

- China’s GDP approximately doubles from 2000 to 2015 in Scenario A and increases by nearly 50 percent in Scenario B.
- China’s GDP growth rate in Scenario A over the 2000–2015 period is slightly over 5 percent per annum, while in Scenario B the annual growth rate is below 3 percent.
- By 2015, China’s GDP in Scenario A is more than three times that of Japan in PPP terms, but only 36 percent of Japan’s GDP if nominal exchange rates are used for the dollar conversions. In Scenario B, the China GDP forecasts are more than 30 percent below those in Scenario A, both in PPP and XR terms.
China’s per-capita GDP nearly doubles between 2000 and 2015 in PPP terms but still remains well below $10 thousand in 2015 in Scenario A.

China’s military spending and military capital rise substantially in Scenario A, as a consequence of forecasted GDP growth and posited military investment, respectively. By 2015, China’s military capital is more than four times that of Japan in terms of the purchasing power of the yuan for investment goods (PI) and is about the same as Japan’s in terms of nominal exchange rates. In Scenario B, China’s military spending and military capital are, respectively, 45 percent and 30 percent below those in Scenario A.

INDIA

When the Bharatiya Janata Party (BJP) came to power in 1996, its election platform contained three goals relevant for our forecasts: (1) further liberalization of the economy, (2) limiting the role of foreign multinational corporations, and (3) making India an overt nuclear power. These goals remain useful guideposts for forecasting India’s economic and military future because a broad consensus underlies each of them, and this consensus has been strengthened by the BJP’s reelection in 1999. For example, most Indian policymakers agree on the need to retreat from the regulatory excesses of previous decades. Similarly, for historical and political reasons, most policymakers are ambivalent toward foreign corporations and investors, both courting and resisting them. Finally, having decided to display and enhance India’s overt nuclear capability, policymakers are expected to turn to the design of appropriate doctrines to guide and control its use.

In the present analysis, we have considered two different scenarios: a conservative-growth case, and a feasible high-growth forecast. We report here only the conservative-growth scenario. The high-growth scenario registers about one percentage point higher annual GDP growth than the conservative case, with correspondingly enhanced effects on military spending and military capital growth. The conservative forecast is constructed from the same assumptions adopted in our earlier work.13 These assumptions are largely internal to the

13See Wolf et al., 1995, pp. 49–52.
Indian economy, eschewing any heroic role for either foreign investment or exports, or heroic reform of the public sector, in keeping with how the Indian economy has been managed during the past two decades.

The “feasible” high-growth scenario is designed to capture the effect of aggressive action that might be taken on at least two additional fronts: raising the share of GDP devoted to investment and attracting greater levels of foreign-portfolio and foreign-direct investment. The former goal is difficult to achieve without terminating public-sector dissaving, either through efficiency improvements or through divestiture. The high-growth scenario should be interpreted as a statement about India’s economic potential that can be realized through aggressive policy reform without incurring unacceptable political risks; it should not be interpreted as a statement about India’s “maximum” economic potential, which could be even greater.

The high-growth scenario is based upon the following three key assumptions. First, the ratio of GDP devoted to investment is assumed to increase from approximately 25 percent in 1998 to 30 percent in 2005 and remain at that level thereafter. Second, foreign-direct and -portfolio investment will rise gradually from $5 billion per year in 1993 to a modest $15 billion (in 1998 U.S. dollars) by 2005, and stay at that level. The effect of foreign investment decreases proportionally in later years as the Indian economy grows in size. Third, Indian policymakers are assumed to channel foreign investment strategically so as to acquire new technology, boosting TFP to 2 percent per year from 2005 onward, compared with 1.5 percent between 1998 and 2005.

That the Indian economy can grow faster than our conservative forecast is amply borne out by the economy’s actual performance between 1993 and 1997 (that is, post-economic reform and pre-Southeast Asia crisis). During this period, Indian GDP grew at an annual compound rate of 7.2 percent, compared with our earlier forecast of 5.8 percent. Several factors account for this discrepancy: (1) a postreform, short-term spurt in economic efficiency over and above our long-term TFP estimate; (2) back-to-back favorable monsoon years leading to healthy agricultural growth; (3) improved export performance; and (4) increasing foreign-direct and -portfolio investment (3–5 billion U.S. dollars).
dollars per year since 1993.\textsuperscript{14} As a point of reference, China attracts roughly 30–40 billion U.S. dollars per year of direct and portfolio investment.

However, the impressive economic performance of the 1993–1997 period will be difficult to sustain. Favorable monsoons cannot occur repeatedly, and the East Asian financial crisis has caused Indian exports to lose some of their growth. Because of these factors, future economic growth rates are more likely to approach our earlier forecast of 5.5 percent per year on average for the 2000–2015 period. These rates are reflected in the conservative forecasts shown in Table 9. If Indian policymakers were to aggressively reform the public sector and pursue greater levels of foreign investment, as their public statements indicate, then a higher annual growth rate of 6.6 percent is clearly attainable.

The forecasts of India’s economic and military trends (in terms of both XR and PPP conversion rates) from 1995 to 2015 are summarized in Table 9.

Nevertheless, the conservative-growth scenario results in forecasts that are 60–70 percent above those made in our earlier work.\textsuperscript{15} These higher estimates are a result of the following factors:

- India’s GDP growth in the 1994–1999 period was considerably higher than was previously forecast.
- The purchasing-power-parity value of the rupee has risen relative to the dollar (that is to say, domestic prices are lower relative to world market prices) than in the earlier Penn World Tables estimates, thereby boosting Indian aggregates in dollar terms.

It is also worth noting that India’s national accounts may soon be revised to capture more fully income generated in the informal sec-


\textsuperscript{15}See Wolf et al., 1995, pp. 49–52.
Table 9
India Trends, 1995–2015

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<tbody>
<tr>
<td>GDP (billions of 1998$)</td>
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<tr>
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<td>359</td>
<td>481</td>
<td>636</td>
<td>833</td>
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<td>PPP</td>
<td>2,227</td>
<td>2,990</td>
<td>3,952</td>
<td>5,174</td>
<td>6,666</td>
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<tr>
<td>Average annual growth rate (%)</td>
<td>5.43</td>
<td>6.07</td>
<td>5.73</td>
<td>5.54</td>
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<tr>
<td>Per-capita GDP (thousands of 1998$)</td>
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<tr>
<td>XR</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>PPP</td>
<td>2.4</td>
<td>2.9</td>
<td>3.5</td>
<td>4.3</td>
<td>5.1</td>
</tr>
<tr>
<td>Military spending (billions of 1998$)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>XR</td>
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<td>16.8</td>
<td>25.4</td>
<td>33.3</td>
<td>42.9</td>
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<tr>
<td>PPP</td>
<td>64.1</td>
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<td>267</td>
</tr>
<tr>
<td>Military capital (billions of 1998$)</td>
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<td>XR</td>
<td>29</td>
<td>32.2</td>
<td>43.8</td>
<td>60.5</td>
<td>81.3</td>
</tr>
<tr>
<td>PI</td>
<td>112</td>
<td>124.2</td>
<td>169.1</td>
<td>233.6</td>
<td>314</td>
</tr>
</tbody>
</table>

NOTES: See Appendix B; parameters: $\tau = 1.5$/yr, $\alpha = 0.55$, $\gamma = 4\%$, $\pi = 25\%$, $\delta = 8–10$/yr, $LdotL = 2.2$/yr, $KdotK = 5.7$/yr.

In our forecasts of India’s military spending in the 2000–2015 period, we estimate that the military spending share of GDP is 4 percent, which is slightly higher than the officially reported figures. However, the official statistics are generally thought to understate total defense spending. In particular, the official statistics on military spending evidently do not include the military components of the National Space and Nuclear programs which, though modest in the past, will probably increase in the future. If appropriate allowance is made to include India’s current and prospectively increased outlays for nuclear

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We believe the 4 percent military spending share of GDP is quite conservative.\(^1\)

In estimating India’s military capital stock, we assume that 25 percent of the defense budget is devoted to military investment in the 2000–2015 period, which is the approximate figure devoted to military investment in the 1990s.

In constructing the time series forecast for India’s military capital stock, the same procedure is followed as with the other countries: New military investment is added to the previously accumulated stock in each successive year, while the military capital stock as of 1994 is depreciated at a 10 percent annual rate, and military investments made after 1994 are depreciated at 8 percent.

As Table 9 and Figures 13–16 indicate, India’s GDP more than doubles between 2000 and 2015, reaching $6.7 trillion in PPP 1998 U.S. dollars, representing about 54 percent of China’s GDP—about 5 percent greater than its present GDP relative to China’s.

Per-capita GDP in India reaches 5.1 thousand PPP U.S. 1998 dollars, about 60 percent of China’s.

In PPP terms, military spending increases more than two-and-one-half times from the present level by 2015 ($267 billion in 2015, compared with $105 billion in 2000).

By 2015, India’s military capital stock reaches $314 billion in PI terms, about 62 percent of China’s military capital ($666 billion), compared with only 48 percent of China’s military capital stock in the year 2000.

It should be noted that all of these comparisons are based on the conservative-growth scenario for India and the sustained-growth

\(^1\)Based upon detailed analysis of India’s defense budget in the early 1990s, S. Gordon has suggested that official defense spending estimates should be increased by 20 percent to allow for defense-related spending by public-sector enterprises. See S. Gordon, *India’s Rise to Power*, New York, 1995; and S. Gordon, “Indian Defense Spending: Treading Water in the Fiscal Deep,” *Asian Survey* #10, 1992.
Figure 13—India Trends, 1995–2015: GDP

Figure 14—India Trends, 1995–2015: GDP Per Capita
Figure 15—India Trends, 1995–2015: Military Spending

Figure 16—India Trends, 1995–2015: Military Capital
Scenario A for China. The feasible high-growth scenario for India would further boost the corresponding forecasts by about 15 percent. If China’s disrupted-growth Scenario (B) were to materialize, the Indian figures would be raised further, by about 30 percent relative to China’s.

KOREA

As noted earlier, the assumptions underlying our present forecasts for Korea differ substantially from those adopted in the earlier work. For our present forecasts, we assume the Korean peninsula remains divided. Our current estimates apply only to South Korea, while the earlier estimates assumed reunification of North and South Korea under the aegis of the South. As discussed earlier, by 1999 South Korea began but did not complete its recovery from the sharp economic reversals of 1997–1998, returning to a significantly positive (over 5 percent) GDP growth rate in 1999, although still well below the rates prior to 1997.

Our earlier RAND forecasts also erred in failing to anticipate the 1997 plunge in asset and currency values, resulting in a deep reversal from GDP growth rates of 9–10 percent per annum to a negative rate of 4 percent in 1998. Consequently, caution is warranted in assessing our current forecasts. Although the South Korean economic picture remains mixed, the signs of recovery are distinctly positive. South Korea’s reform efforts have involved substantial opening to both direct and portfolio investment from abroad, significant improvement in the term structure of South Korea’s large foreign debt, and the buildup of large foreign exchange reserves (about $60 billion), as a result of current account surpluses in 1998 and 1999. However, the process of restructuring South Korea’s chaebol-dominated industry—the chaebol are the large, multisector conglomerates, such as Daewoo, Samsung, and Hyundai—and reforming its banking system has proceeded slowly and only to a limited degree.

Based on data analysis over the past several decades through 1997, and on the assumption of a labor share in national income of 60 percent (the parameter $\alpha$ in the model described in Appendix A), we have

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18See Wolf et al., pp. 45–49.
estimated long-term growth in total factor productivity (the parameter \( \tau \)) of 3 percent annually. We assume further that the labor and capital inputs grow annually by 0.5–1.0 percent and between 0.2 and 7.1 percent, respectively. These assumptions are based on labor force projections from the International Labor Organization.\(^\text{19}\)

The extraordinarily wide range in the growth of capital results from several considerations: First, the International Monetary Fund’s data on Korea’s annual investments imply a decline in the capital stock (because depreciation exceeds new investment). Second, over the forecast period, we assume investment is sufficient to raise the annual growth of capital to a “long-run” growth rate of slightly more than 7 percent, a figure that is at the lower end of Korea’s historical range during 1975–1997, which is reasonable for the forecast period. The GDP growth rate that results for the period 2000–2015 is slightly above 5 percent, substantially below the 7.9 percent growth rate estimated in our 1995 study. This decline from the earlier estimate is attributable to the reduction in estimated total factor productivity growth, the effect of the 1997–1998 recession in reducing the level of GDP in the early years of the forecast period, and the effect of the recession on new investment and thus upon Korean civilian capital stock.

Our projections indicate that Korea’s GDP and per-capita GDP more than double between 2000 and 2015 (see Table 10 and Figures 17–20).\(^\text{20}\) Korea’s military spending is also projected to increase substantially between 2000 and 2015, although the rate of this increase and the absolute amount of the increase (from \$24.7 billion in 2000 in 1998 PPP dollars to \$53.9 billion in 2015) are below the corresponding estimates in our 1995 analysis.\(^\text{21}\)

\(^{19}\)See Appendix B and International Labor Office, 1997 and 1996, interpolated.

\(^{20}\)This projected doubling in per-capita GDP is similar to the projection in our earlier work, except that the dollar values in the current projections are significantly above those in the earlier work. The principal reasons for this are that the present projections are for South Korea alone while the earlier ones included the North (which had a depressing effect on the absolute level of per-capita GDP), the use of more recent PPP conversion rates, and the expression of the current results in 1998 dollars, versus 1994 dollars in the earlier work.

\(^{21}\)However, it should be noted that this rate of increase as well as the level at which it ensues are substantially (20–30 percent) below those projected in our earlier work.
As Table 10 indicates, Korea’s military capital stock is projected to increase by 85 percent from 2000 to 2015 in 1998 dollars, using the PPP for investment goods to convert from won to dollars (from $61.4 billion in 2000 to $113.5 billion in 2015). Thus, by 2015, Korea’s military capital would be approximately equal to that of Japan, while Korea’s current military capital stock is less than 60 percent of Japan’s. Furthermore, South Korea’s GDP would rise during this 15-year period from about one-quarter of Japan’s GDP in 2000 to nearly one-half of it by 2015 (in PPP dollars).

Again, the explanation lies in the fact that the earlier estimates included military spending for a reunified North and South Korea. See Wolf et al., 1995, p. 48.
Figure 17—Korea Trends, 1995–2015: GDP

Figure 18—Korea Trends, 1995–2015: GDP Per Capita
Figure 19—Korea Trends, 1995–2015: Military Spending

Figure 20—Korea Trends, 1995–2015: Military Capital
INDONESIA

The greatest uncertainty in our forecasts for the five countries involves Indonesia. Despite generally successful completion of its June 1999 elections for the Indonesian National Assembly and the December presidential election, the country’s political outlook remains cloudy and is still further obscured by the turmoil in East Timor and Aceh. Tensions between Indonesia’s political and military leadership are acute, and the outlook for stable political leadership remains dubious at the end of 1999.

In this situation, the role of Indonesia’s military establishment—sometimes a force for internal stability—is also highly uncertain, as are the resulting effects on military spending and new military investment in Indonesia.

Nevertheless, there have been some limited signs of improvement in the Indonesian economy. The GDP seems to have ended its sharp decline, and in 1999 the rupiah recovered about half its deep depreciation from the two preceding years. Inflation has cooled, and Indonesia’s international payments are less adverse than during the two preceding years. However, banking reform, bankruptcy legislation, and other institutional reforms have been delayed. Consequently, our projections should be treated with even greater reservations and caution than are warranted for the other four economies dealt with in this analysis.

Table 11 summarizes Indonesia’s GDP, per-capita GDP, military spending, and military capital investments for the period from 1995 through 2015. Because of both the sharp economic reversals experienced in 1997–1999 and the continuing instability in the economy and polity, the forecasts summarized in Table 11 project GDP growth rates 15–30 percent below those forecast in RAND’s prior work.22

22Unpublished RAND research by Charles Wolf, Jr., and Michael Kennedy on long-term economic and military trends in Russia, Germany, and Indonesia.
Table 11
Indonesia Trends, 1995–2015

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<tbody>
<tr>
<td>GDP (billions of 98$)</td>
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<tr>
<td>XR</td>
<td>59</td>
<td>62</td>
<td>75</td>
<td>92</td>
<td>114</td>
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<tr>
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<td>908</td>
<td>1123</td>
<td>1390</td>
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<tr>
<td>Per-capita GDP (thousands of 98$)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>XR</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
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<td>4.0</td>
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<tr>
<td>Military spending (billions of 98$)</td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>1.1</td>
<td>1.5</td>
<td>1.8</td>
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<tr>
<td>PPP</td>
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<td>27.8</td>
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<tr>
<td>XR</td>
<td>5</td>
<td>4.1</td>
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<tr>
<td>PI</td>
<td>46.6</td>
<td>38.9</td>
<td>37.3</td>
<td>40.6</td>
<td>47.3</td>
</tr>
</tbody>
</table>

NOTES: See Appendix B; parameters: \( \tau = 1.9\% / \text{yr} \), \( \alpha = 0.6 \), \( \gamma = 1.8–2\% \), \( \pi = 25\% \), \( \delta = 8–10\% / \text{yr} \), \( LdotL = 1–2.5\% / \text{yr} \), \( KdotK = 2–7.2\% / \text{yr} \).

Although all the forecasts reported in the present study show a substantial difference between the dollar estimates based on nominal exchange rates and on real purchasing-power-parity rates, in the Indonesian case the difference between the two estimates is more than an order of magnitude—by far the highest discrepancy among the five countries. The reason for this enormous difference lies in the extent of depreciation of the Indonesian rupiah, by 80 percent over the period preceding and following the mid-1997 financial crisis. Consequently, the nominal exchange rate estimates in Table 11 are misleadingly low. However, the PPP-adjusted rate may imply an overvaluation of the rupiah because of internal price inflation triggered by the sharp currency devaluation, but not reflected in the Penn World Tables data through 1995.

A more accurate picture of the Indonesian economy might be conveyed by averaging the PPP and nominal exchange rate estimates shown in Table 11, a procedure we forgo in the interests of avoiding...
further complications. Nevertheless, several points can be highlighted from the Table 11 estimates:

- Indonesia’s real GDP will probably regain its 1995 level by 2005.
- Military spending in 2015 in PPP terms will be about half that of Korea’s.
- Although military capital, as estimated from the PPP index for investment goods, rises slightly over the period from 2000 to 2015, it falls appreciably relative to the military capital stock of other countries in the region.

SENSITIVITY TESTS

We have performed limited sensitivity testing of the key parameters according to the following procedure: first, raising and lowering the parameter values by plus-or-minus one-half of the standard deviations of their respective historic means; second, inserting these changed values separately, one at a time, in the model to determine their effects on the resulting forecasts; and third, repeating the second step, but with all of the altered parameter values inserted simultaneously rather than separately—that is, all parameters were increased or decreased by one-half of the standard deviations from their historic means.

In general, the sensitivity of the forecasts varies among the five countries and among the several parameters in expected ways. If the standard deviation of a particular parameter in a particular country is large relative to that of the same parameter in another country, the resulting effect on GDP, military spending, and military capital will be greater. Among the several parameters, variations in the factor productivity parameter, \( \tau \), has the largest effect on the forecasts. Unsurprisingly, changing all of the parameter values simultaneously—whether up or down—alters the forecasts much more than the separate, one-at-a-time changes.

For example, for Japan an increase of one-half of the standard deviation in the capital growth parameter, KdotK, would raise forecasted GDP in 2015 by 8.8 percent (from 6.8 trillion to 7.4 trillion in 1998 dollars). A similar but separate increase in the employment growth
parameter, LdotL, and in the factor productivity parameter, τ, would raise GDP in 2015 by 9 percent and 12.9 percent, respectively. The same three parameter changes would have the effect of raising forecasted military spending in 2015 by 8 percent, 3 percent, and 13 percent, respectively. When all of the parameters are simultaneously raised by one-half of the standard deviations from their historic means, the effects are understandably magnified: GDP and military spending in 2015 would thereby increase by 27 percent and 29 percent, respectively. It should be evident, however, that the likelihood of all parameters changing simultaneously in the same direction, rather than separately and perhaps in offsetting directions, is remote.

For China, the sensitivity of results to parameter changes is much greater because the corresponding standard deviations from the parameters’ historic means are larger. Thus, separately increasing the capital growth, employment growth, and factor productivity growth parameters by one-half the standard deviations from their historic means would raise GDP in 2015 (for China’s stable growth Scenario A) by 30 percent, 25 percent, and 55 percent, respectively. Correspondingly, military spending in 2015 would increase by 27 percent, 23 percent, and 53 percent, respectively (assuming that military spending is 2 percent of China’s GDP). Again, when all parameter values are simultaneously raised, the effects on GDP and military spending are greatly magnified: GDP and military spending increase by 62 percent and 45 percent, respectively.

It should be noted that reductions in the parameter values by one-half of the corresponding standard deviations have generally symmetric effects to those above, but in a downward direction.

DECOMPOSITION OF INVESTMENT

To further test the plausibility of our modeling assumptions, we have examined the supportability of capital stock growth rates. The situation differs for each of the five countries.

• In Japan, the value of the capital growth parameter posited in our forecasts decreases over the 15-year period from 5 percent per year in the 2000–2005 period, to 4 percent per year in 2005–2010, to 3 percent per year in 2010–2015, for reasons discussed in the text. The annual GDP growth rate during the corresponding periods
Estimates for the Five Countries, 2000–2015

rises from 0.92 percent, to 1.56 percent, to 1.62 percent, respectively. The effect of these trends is to raise the implied investment share of GDP from 13 percent in 2000, to 16 percent in 2005, to 18 percent in 2010, and 19 percent in 2015. While the 6 percent increase over the 15 years is substantial, it is important to realize that Japan’s current account surplus is now about 5 percent of its GDP. So, Japan’s domestic savings rate, which includes both the current account surplus and domestic investment, is already sufficient to finance this scale of increase in the investment rate. A decline in and eventual elimination of Japan’s current account surplus would make our forecasts entirely reasonable, even without drawing down of Japan’s FX reserves which, at about $225 billion, are the world’s largest. Furthermore, Japan’s savings rates in the 1970s and 1980s were more than the 19 percent rate referred to above, so precedents for higher rates already exist.

The capital growth figures used for Japan are based on data from the Japan Statistical Yearbook, 1998. Annual capital growth as measured therein is defined this way: The “gross capital stock as of the end of each year (or each quarter) after 1970 is estimated on the basis of the value of assets made available by the 1955 and 1970 ‘National Wealth Survey,’ by adding to or subtracting from it annual investments or asset removals made since. The assets covered are limited to reproducible tangible fixed assets, excluding private non-profit entities. Dwelling houses which do not serve directly as a means of production are also excluded from the coverage.”

Some growth models do and others do not include residential housing. The ones that exclude it do so because of variability and noncomparability of data on residential investment, difficulties in imputing housing services to housing investment, difficulties in appraising the value of the housing stock, etc.

What matters for our estimates is that what’s done is done consistently. In the Japan estimates, residential housing is excluded from the capital stock in the base period (i.e., the Japan Statistical Bureau does not provide a separate estimate of the housing stock), so residential investment was correspondingly excluded from the annual capital growth estimates. If it were to be included in the latter, this would amount to raising the investment shares of GDP by approximately 5–6 percent.
• In China, the capital growth parameter is assumed to decrease from 8 percent per year at the beginning of the 2000–2015 period to 4 percent per year by the end of the period, while annual GDP growth is rising from 4.9 percent to 5.3 percent (NB: The increase in GDP growth is due to the assumption of an increase in factor productivity growth from 1 percent at the start of the period to 1.5 percent during the last five years of the period, for reasons relating to the progress of reform and other reasons discussed in the text). During the 15-year period covered by the forecasts, the investment rate implied by the capital growth parameter is assumed to be equal to the annual savings rate, rising with the latter from 25 percent in 2000 to 30 percent in 2015. These rates are at or below current and recent savings rates in China, so the prospect of financing the assumed capital growth figures appears to be quite reasonable even without capital inflows. This, of course, is not intended to imply that capital inflows will not occur, or that they are not desirable on several other grounds.

• In India, the issue of an increasing investment rate does not arise because the rate of GDP growth projected in our estimates is actually slightly above the rate of capital growth: Annual GDP growth over the 15-year period is 5.8 percent, while annual capital growth is 5.7 percent. The investment share of GDP remains pegged at 25 percent throughout the period in the “conservative” scenario reported in our study. This rate is about equal to India’s savings rates in recent years (i.e., capital inflows have been quite small), so there is no apparent problem of investment financing over the period we cover in our estimates.

• In Korea, the annual rate of capital growth rises substantially from near-zero at the start of the forecast period in 2000, to 7 percent by the end of the period in 2015. Annual GDP growth averages 5.6 percent over the 15 years, starting at 4 percent per year in the first five years, and reaching 6.5 percent during the final five years. The investment share of GDP implied by these calculations rises from an annual rate of 18.1 percent in 2000 to 29.6 percent in 2015. While this is a substantial increase, it has ample precedent in Korea’s annual savings rates in the 1980s and 1990s, which averaged 29 percent and 35 percent, respectively. So, financing of the implied investment rates does not appear to be a problem. Once again, this does not imply that capital inflows are not now,
nor will not be in the future, desirable on other grounds besides financing capital growth.

- In Indonesia, capital growth also rises substantially from an annual rate of 2 percent in 2000, to 7.2 percent by the end of the period covered by our estimates. Over the same 15 years, GDP grows at a rate of 4 percent at the start of the period to a rate of 6.5 percent in the final five years (2010–2015). The investment share of GDP correspondingly rises from 22 percent in 2000 to 32.8 percent, plainly a big increase. Nevertheless, the problem of financing this increase from a combination of domestic savings and capital inflows does not appear to be insuperable: In the 1980s and 1990s, Indonesia’s savings rates averaged above 30 percent.

The conclusion from this is that the problem of financing the investment rates implied by these forecasts appears to be manageable in each of the five countries, although it will be more difficult in some (e.g., Indonesia) than in others (e.g., China and Japan).