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LOOKING INWARD FOR GROWTH

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Abstract

Export led growth has been very effective in transforming China's economy and establishing a large high-saving middle class. Notwithstanding political opposition from trading partners, this growth strategy has also offered the rest of the world an improved terms of trade and cheaper finance. Yet it is believed by China's government that this convenient strategy has run its course and the transition has begun to a model that "looks inward" for growth, to be driven by expanding consumption and home investment. This paper uses a numerical model of the Chinese economy with oligopoly behaviour to examine the available "inward" sources of transformative growth along with the policies needed to exploit them. Success will require the redistribution of the considerable rents now accruing to connections of key state owned enterprises, suggesting the potential for political resistance and the yet-avoidable possibility that China could fall into a "middle income trap".

Looking Inward for Growth

1. Introduction

There is wide agreement outside China, and more recent concurrence inside, that China's growth will, and should, be increasingly underpinned by rising home consumption rather than exports.[1] The foreign viewpoint is notwithstanding the considerable contributions of China's export-led growth to improvements in the foreign terms of trade and to cheaper financing of investment and government spending. The dominant political force behind this view seems to be concern over declining overall economic performance, at least compared with China, comparatively high unemployment and the very visible nature of manufacturing "offshoring".[2]

Yet the global gains conferred by China's growth are fragile and the Chinese regime that has produced them faces potentially destabilising threats from within and without. For this reason there looms the "middle income trap" widely ascribed to other developing regions (World Bank 2010). The poor performance of trading partner economies clearly weighs on China's government, as does foreign political hostility to continued export led growth. Internally, there has been a tightening of labour markets, foreshadowing a Lewis "turning point" that would mark a natural end to export led growth.[3] In addition, there are reasons why increased public investment and the fostering of increased private consumption are of considerable political value at present. The high environmental costs of China's manufacturing expansion have yet to be fully covered and there is increased income inequality, associated with rents in the state-owned sector that will be politically difficult to unwind (Tyers and Lu 2008, Riedel 2011). This inequality coincides with socioeconomic stratification in China's periphery, which has precipitated increased class, ethnic and regional conflicts.

Middle income "slowdowns" in developing countries that have heretofore grown strongly out of poverty are the subject of expanding interest (Easterly 2001; Eichengreen et al. 2011). The focus is the distinction between "natural" slowdown in the convergence process as poorer countries approach full industrialisation, which is due to diminishing returns to physical and human capital

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[1] For the foreign, and particularly the American, perspective see Bergsten et al. (2008) and Lardy (2006, 2011, 2012). For the Chinese official line on the "rebalancing" of its economy, including its external accounts, see Wen (2007, 2011) and Yi (2011).

[2] Foreign animus toward China's economic policy regime has been further inflamed by the large current account surpluses of the last decade and the perspective of some in the West that China's political system denies basic human rights or of others that its large government and defence forces represent a strategic threat. See Tyers (2012a).

[3] The timing of China's Lewis turning point is a subject of controversy, as suggested by the contrasts between the views expressed by: Cai (2010), Garnaut (2010) and Golley and Meng (2011), which offer just a sampling of a substantial literature. There is, however, little doubt that the turning point is on its way, even if there is little agreement as to whether recent real wage rises suggest its presence.

and diminished "catch-up" investment incentives (Lucas 2009), and premature stagnation due to powerful vested interests that oppose economic the policy reforms needed for the final catch-up phase (Haber et al. 2008; Riedel 2011). The sense in which the slowdown is considered a "trap" derives from a divergence of collective interests from those of the leadership group, with the latter associated with rent extraction (corruption) that peaks at middle levels of real per capita income.

So where are the rents and the vested interests that could retard China's future growth and does "turning inward" exacerbate the risk of an associate slowdown? The financial sector is one location. Very high saving challenges this sector to allocate efficiently across investment opportunities. The many weaknesses in this process, stemming in part from the protection of state owned financial institutions, have already received considerable attention (Riedel 2007; Walter and Howie 2011). Yet the potential gains from further industrial reform that reduces rents in protected corners of the economy extend well beyond the financial sector to include comparatively protected and state-owned heavy manufacturing and services. Industrial reforms have penetrated these sectors less because of their political sensitivity. If such reforms are required for inward focussed growth then there will be political difficulty achieving it. Yet such reforms offer an effective replacement of export led growth that is also transformative of China's economic structure and its labour force.

Alternative approaches to inward-focussed growth are explored in this paper, including increased government spending, further pure privatisation, the fragmentation of state-owned enterprises, price cap regulation and foreign direct investment in heavy manufacturing and services. Their economic implications are assessed using a mathematical model of the Chinese economy that captures the behaviour of oligopoly state-owned oligopolies and the impacts of further industrial reform. The greatest potential for inwardly-generated growth is shown to rest, as expected, with further industrial reform in heavy manufacturing and services. The simulation results suggest the best prospects for further growth are to attack rents with tighter price cap regulation and to advance services productivity through FDI. The first of these will be resisted by those currently enjoying the rents and the second presses against the desire on the part of China's government to protect services from foreign ownership.

The next section reviews the relative merits of export led growth, develops the reasoning behind the choice to turn inward in China's case and discusses the sources of internally generated transformative growth. In Section 3, the particular structure of China's economy is reviewed along with the associated sensitivity of its overall performance to its real exchange rate. Section 4 offers a description of the model used and the construction of its database. Section 5 compares inward-sourced growth scenarios and Section 6 concludes.

2. The Turn Away from Export Led Growth

Economic development is primarily about shifting the population from low labour productivity farming to urban employment where the availability of physical capital ensures higher income and more efficient access to essential services. This requires rural-urban migration and, at least initially, basic (mainly primary) education and training. These conditions supply a workforce suitable for light manufacturing. If the protection of property rights and the export infrastructure facilities are sufficient, the availability of adequately trained workers then attracts capital that is supplied from both domestic saving and foreign direct investment (FDI). In the "East Asian model", much of the migration from rural areas goes into manufacturing, though some goes to construction and other services, which also expand.[4] In a final phase, the transition from middle level to very high real per capita income requires further education and training suited to the growth of sophisticated services.

The merits of export led growth

The growth in the local supply of light manufactures that occurs in the early stage in the East Asian model is more than can meet local demand. Comparative advantage in light manufacturing is realised via openness to trade and so the home labour force is transformed by exporting. As it turns out, this transformation is also beneficial to already-industrialised trading partners. This is because the resulting change in the international terms of trade is positive for them – light manufactured imports are cheaper and skill-intensive durable (consumer and capital) goods, which they export, are in higher demand. Moreover, since the opening of such developing economies in this way supplies additional low-skill labour to the integrated global economy, FDI opportunities are abundant and savers in industrialised countries earn higher returns. Idiosyncratically, the East Asian model has also offered high saving households and firms which have supplied excess saving to the global economy. This has financed investment and government expenditures in the industrialised economies in ways that have enhanced their growth.[5]

The choice to look inward

Variations on the East Asian model have been the dominant basis for catch-up by poorer countries and regions for more than a century (Dooley et al. 2004). Then why should the Chinese choose to "look inward" now? The reasons are manyfold. First, it is inevitable that China will cease to

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[4] The Indian model differs from this in that the rural to urban migration goes primarily to services with manufacturing by regulatory and infrastructural constraints. See Bardhan (2010).
[5] While it is true that cheaper credit has not always led to growth enhancing expenditures in these countries, their errors in public and private expenditure patterns have not been the fault of the Asian high savers.

depend on labour intensive exports and move its production up the chain of sophistication in the manner of Japan, the Republic of Korea and its regions in Taiwan and Hong Kong before it. This generally coincides with a slowdown in the rate of rural to urban migration and some acceleration in the rate of rise in real wages – the "turning point" of Lewis (1955). The ardent debate over the proximity of this turning point notwithstanding, the most carefully considered evidence suggests it may still be some way off (Cai 2010; Golley and Meng 2011). It is nonetheless true that demographic changes associated with China's one child policy have accelerated it, and labour costs have indeed grown more sharply in recent years. Even though this pattern of labour force tightening is smooth, the associated transition to slower growth can be abrupt and destructive, as in the case of Japan in the late 1980s,[6] and so it is possible the Chinese government seeks to ensure a smooth transition.

A second important reason is that growth has slowed in the regions to which China's exports are directed. This raises the prospect that the terms of trade might shift more rapidly against it if exports continue to be pushed out at the current rate and so a smaller proportion of the benefits from export led growth would accrue to China.[7] Third is political pressure from destination regions against China's current account surpluses of the past decade, the perceived unfairness of Chinese policy and the loss of trading partner employment in manufacturing. Political attacks on Chinese exports, and anti-Chinese xenophobia in general, are the more likely when the movement of vast numbers of Chinese workers into the modern sector is perceived as being associated with the unemployment of a tenth of workers in Western Europe and the US. This association has high level backing in policy debates, particularly in the US (Bernanke 2006; Krugman 2010).

The Western backlash is essentially mercantilist and much of it is directed at China's exchange rate. The perception in the US that countries like China use "exchange rate protection", stems from the role of the US dollar as the reserve currency and the difficulty the US faces when a lack of competitiveness would justify a depreciation against others. In the 1980s, this ire had been directed against Japan, leading to the Plaza Accord and a large and destructive appreciation of the Yen (Goval and McKinnon 2003; Hamada and Okada 2009), and ultimately to the US *Exchange Rates and International Economic Policy Coordination Act of 1988*, which formalised the US "defence" against currency manipulators. Poverty, and its associated low wages, are seen in US policy debates as an unfair trade advantage rather than a problem that is solved by expanded trade. The fact that the underlying real exchange rate of China against the US has appreciated substantially

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[6] The literature on Japan's stagnation since the late 1980s is vast. See Hayashi and Prescott (2002) and Tyers (2011).
[7] This raises the prospect of "immiserizing growth", which is already hotly debated as a consequence of Chinese export expansion, at least for smaller, poorer exporters that compete with China (Bhagwati 1987).

since 2004 and continues to appreciate seems to have been missed in the American literature (Tyers and Zhang 2011).

Finally, China is constantly criticised for its lack of political rights and for its treatment of unhappy minorities such as the Tibetans and the *Hui zu*. This criticism is sometimes justified but often it stems from fear of China as a potential strategic opponent and a sense that the advocacy of additional political and religious rights might weaken it in such a competition. These external criticisms of the Chinese state and its policies, while occasionally well intentioned, are too often xenophobic and made in ignorance or disregard of the considerable benefits of Chinese growth for the West. Within China, however, inequality has become a major political issue and the "turn inward", via expanded public investment, has also been justified as a means of redirecting the fruits of growth to lagging regions and to the rural sector in general (Wen 2011).

Inward sources of growth

Given the apparent success of China's surge in public investment during the global recession in 2008-9 the government is surely tempted to think of expanded government activity as an inward source of future growth. And it is common for governments of developing countries to undersupply public goods that are foundations for growth. In China's case these include the facilities and regulatory institutions to support basic and higher education, transport and telecommunications infrastructure, retirement insurance, health insurance and environmental protection. Compared with other developing countries, China is in the fortunate situation of having implemented a sensible tax law in 1994 that is accessing an increasing share of all its economic activity. This means that central government tax revenue is rising faster than GDP and it was this that allowed the substantial increase in public investment in 2009 without a large increase in the fiscal deficit (Jia and Liu 2009). So a rise in government activity will clearly continue to contribute to China's GDP. It is unclear, however, to what extent if any this expanded government activity will foster sustainable productivity growth.

An important and yet untapped source of further growth is in the extension of industrial reforms to heavy manufacturing and services. State owned firms in these sectors have been relatively protected and significant foreign ownership shares have been prevented. One consequence of this is that these firms, supplying as they do essential materials and services to an economy that is expanding rapidly, courtesy of the more competitive light manufacturing export sector, have been extremely profitable (Lu et al. 2008). At the same time these firms have returned little in the way of dividends to the central government and so their profits have not been distributed to their public owners. Instead, these profits have been reinvested. Consequently, the decision to save or consume

from this component of national income has been denied households, contributing substantially to China's extraordinary saving, amounting to more than half its GDP.[8]

Substantial potential future growth lies in the redistribution of these rents, which would make Chinese intermediate products cheaper and foster overall output growth while at the same time raise private consumption. A number of approaches are possible, some of which are already being tried.

1) Pure privatisation: this would return the profits of SOEs to private households and foster consumption, raising domestic demand for China's goods and services,

2) SOE fragmentation: this would force more competition between firms and thus reduce mark-ups, and

3) Tighter regulation of SOE pricing: this could, at least in theory, force firms to price at their average costs, eliminating rents altogether and reducing the price level.

These alternatives are examined in the analysis to be discussed in subsequent sections.

3. China's Structure, Performance and its Real Exchange Rate

The implications of a turn inward ride rather importantly on consequent changes in China's underlying real exchange rate, or its level of global competitiveness. This special sensitivity stems from its economic structure, as summarised in Table 1. Four patterns stand out:

1) the great majority of non-agricultural employment is in the export-oriented light manufacturing sector – indeed, employment in this sector exceeds that in agriculture,

2) the light manufacturing sector dominates China's exports,

2) this sector is relatively competitive – price mark-ups are low and so pure or economic profits make up only a small share of total revenue, and

3) the SOE-dominated energy, metals and services sectors are less labour-intensive and at the same time they are oligopolistic, generating substantial rents.

Since exporting firms are highly competitive, generate little pure profit and carry most of the new or "modern sector" employment, future employment performance is very sensitive to the relativities between home wages and export prices, and hence to China's real exchange rate.

Yet the inward-looking policy changes that could contribute most to enlarging China's economy all have implications for the real exchange rate. Consider, first, the case of government expansion.

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[8] The contribution of corporate saving to China's overall saving rate and to the current account surpluses of the past decade is examined by Kuijs (2006), Kuijs and He (2007) and Tyers and Lu (2008).

There are several mechanisms by which expanded government expenditure tends to appreciate the real exchange rate.

The Mundell-Fleming effect

Increased government borrowing raises home yields and induces financial inflow (Fleming 1962, Mundell 1963). The net effect is to raise demand for home relative to (more elastically supplied) foreign products and services and hence to appreciate the real exchange rate.

The non-traded good demand effect

This recognises that governments concentrate their spending on non-traded services and so their expansion changes the composition of aggregate demand toward more inelastically supplied home products, driving up their relative price and hence the real exchange rate.[9]

The oligopoly rent effect

Increased government spending raises home demand for home products, reducing the exported share of the average firm's output. Because foreign demand is the most elastic, this reduces the elasticity of demand faced by oligopoly firms, which then raise their mark-ups. And since these firms reside mainly in the protected heavy manufacturing and largely non-traded services sectors, such price rises appreciate the real exchange rate by raising the relative prices of non-traded services and by increasing costs faced by the competitive export sector (Tyers and Lu 2008). A way of thinking of this is that the excess profits are achieved by supplying less output and so the oligopoly firms reduce productivity in the largely non-traded sectors of the economy.

In assessing fiscal expansions, the negative effect on the real exchange rate is commonly seen as being more than offset by the resulting expansion in aggregate demand. A key mechanism for this is that the increase in government dissaving reduces the *national* saving rate, at least temporarily, requiring the failure of Ricardian equivalence. Because reduced national saving contracts the leakage of expenditure abroad, which in China takes the form of foreign reserve accumulation, the current account surplus is reduced and more Chinese expenditure falls on the home relative to the foreign economy. This has the effect of either inducing a home inflation or arresting a deflation. If the latter, it stabilises the relationship between nominal wages and the price level and hence maintains the steady state level of employment. Just such a short run approach to government spending in China is taken by Tyers and Huang (2009). In this study the focus is on transformative

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[9] De Gregorio et al. (1994) and Froot and Rogoff (1995), and more recently Galstyan and Land (2009), recognise that boosting government expenditure appreciates the real exchange rate by this mechanism, even in the case of public investment, at least in the short run.

sources of growth that operate in the long run and so the expansion of government to be considered here is long run in orientation and therefore tax financed.

Returning to the oligopoly pricing effect on the real exchange rate, the alternative of further industrial reform is also considered here. To the extent that this reduces oligopoly mark-ups it will tend to depreciate the real exchange rate and thereby preserve the competitiveness of China's export manufacturing sector. The further alternative of FDI in Chinese services offers increased services productivity. This also would depreciate the real exchange rate by reducing the relative price of non-traded products. To quantify the effects of these on China's overall economic performance, a complete model of the Chinese economy is offered.

4. An Oligopoly Model of the Chinese Economy

To capture the behaviour of the oligopolistic SOEs, a comparative static macroeconomic model of the Chinese economy is used that embodies a multi-industry structure in which all industries are treated as oligopolies, with firms in each industry supplying differentiated products and interacting on prices.[10] The model is described in detail by Tyers (2012b) and in appendices to Tyers and Lu (2008). A short summary of the relevant elements is offered here.

Behavioural underpinnings:

The model has neoclassical foundations with final consumption, intermediate demand and the demands created by a capital goods sector treated as in most economy-wide models, with nested CES preferences.[11] Government expenditure is an exogenous policy variable but it is subdivided across goods and services also via nested CES systems and government revenue stems from a tax system that includes both direct (income) taxes levied separately on labour and capital income and indirect taxes including those on consumption, imports and exports.[12] The level of total investment placing demands on the capital goods sector has Q-like behaviour, being influenced positively by home rates of return on installed capital and negatively by a financing rate obtainable from an open "bond market" in which home and foreign bonds are differentiated to represent China's capital controls. Savings are sourced from the collective household at a constant rate and from corporations at industry-specific rates on the assumption that corporate saving (retained earnings) in SOEs depends on the magnitudes of pure (economic) profits earned. Foreign direct investment and

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[10] It is a distant descendant of that by Harris (1984), Gunasekera and Tyers (1990), though it is considerably generalised to include macroeconomic behaviour.
[11] See, for example, Dixon et al. (1982).
[12] Income taxes are approximated by flat rates deduced as the quotient of revenue and the tax base in each case.

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official foreign reserve accumulation are both represented, to complete China's external financial accounts.[13]

The departure from convention arises with the way production is specified to account explicitly for oligopoly. Firms in each industry supply differentiated products. They carry product-variety-specific fixed costs and interact on prices. Cobb-Douglas production technology drives variable costs so that average variable costs are constant if factor and intermediate product prices do not change but average total cost declines with output.[14] Firms charge a mark-up over average variable cost which they choose strategically. Their capacity to push their price beyond their average variable costs without being undercut by existing competitors then determines the level of any pure profits and, in the long run, the potential for entry by new firms.

Thus, each firm in industry i is regarded as producing a unique variety of its product and it faces a downward-sloping demand curve with elasticity ε_i (< 0). The optimal mark-up is then:

$$(1) \qquad m_i = \frac{p_i}{v_i} = \frac{1}{1 + \dfrac{1}{\varepsilon_i}} \qquad \forall i \; ,$$

where p_i is the firm's product price, v_i is its average variable cost and ε_i is the elasticity of demand it faces. Firms choose their optimal price by taking account of the price-setting behaviour of other firms. A conjectural variations parameter in industry i is then defined as the influence of any individual firm k, on the price of firm j. For this parameter the non-collusive (Nash) oligopoly implies a zero value, while for a perfect cartel, it has the value unity. Although level of price collusion between firms is not readily estimated, it is calibrated for each industry in China from prior knowledge of mark-ups and elasticities of demand.

Critical to model's behaviour is that the product of each industry has exposure to five different sources of demand. The elasticity of demand faced by firms in industry i, ε_i, is therefore dependent on the elasticities of demand in these five markets, as well as the shares of the home product in each. They are final demand (F), investment demand (V), intermediate demand (I), export demand (X) and government demand (G). For industry i, the elasticity that applies to (19), above, is a composite of the elasticities of all five sources of demand.[15]

$$(2) \qquad \varepsilon_i = s_i^F \varepsilon_i^F + s_i^V \varepsilon_i^V + s_i^I \varepsilon_i^I + s_i^X \varepsilon_i^X + s_i^G \varepsilon_i^G \qquad \forall i$$

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[13] Hereafter the capital, financial and official sub-accounts of China's balance of payments will be referred to as the "capital account".

[14] While firms are oligopolists in their product markets they have no oligopsony power as purchasers of primary factors or intermediate inputs.

[15] The expressions for these elasticities are messy and voluminous. They are derived in appendices to Tyers and Lu (2008).

where s_i^j denotes the volume share of the home product in market i for each source of demand j. These share parameters are fully endogenous in the model.

Thus, the strategic behaviour of firms, and hence the economic cost of oligopolies, is affected by collusive behaviour on the one hand and the composition of the source of demands faced by firms on the other, both of which act through the average elasticity of varietal demand. Thus, when economic shocks change the composition of demand, they also change the average elasticity of demand faced by firms. When this falls, oligopoly firms raise their mark-ups and extract increased rents. Of course, rent extraction depends on costs, and importantly on fixed costs. If there is entry into an industry fixed costs rise with the number of firms, raising average total costs and hence the mark-up required to break even.

Model structure

The scope of the model is detailed in Table 2. The economy modelled is "almost small", implying that it has no power to influence border prices of its imports but its exports are differentiated from competing products abroad and hence face finite-elastic demand. The consumer price index is constructed as a composite Cobb-Douglas-CES index of post-consumption-tax home product and post-tariff import prices, derived from the aggregate household's expenditure function. This formulation of the CPI aids in the analysis of welfare impacts. Because collective utility is also defined as a Cobb-Douglas combination of the volumes of consumption by generic product, proportional changes in overall economic welfare correspond with those in real GNP.

The quantity of domestically-owned physical capital is fixed both in the short and long runs, so that changes in the total capital stock affect the foreign ownership share and hence the level of income repatriated abroad. In the experiments to be presented a long run closure is used throughout.[16] Physical capital is homogeneous and fully mobile between industries, though claims on home and foreign capital are differentiated and so there is a wedge between the home and domestic bond yields (interest rates) that stems the differentiation of these financial assets (due, say, to the retention of inward and outward capital controls) combined with endogenous reserve management policy. All real unit factor rewards are flexible and domestic factor supplies are fixed. A fixed oligopoly structure is retained, assuming SOEs are protected from competitive entry and are prevented from exiting if losses are incurred. Consistent with China's heretofore fiscal conservatism, the base fiscal deficit is held constant with exogenous expenditure changes covered by endogenous changes in tax rates.

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[16] This contrasts with the results presented by Tyers and Huang (2009), which are short run in nature.

5. Comparing Alternative Regimes

To quantify the "natural" slowdown story, the simulations commence with representations of continuing export led growth and the Lewis turning point. Government expansion is then considered, first financed by a rise in consumption taxation and then financed by a rise in corporate taxation. Turning to industrial reform, three types are considered. First, a pure privatisation is simulated by allowing all profits of SOEs to accrue as income to the collective private household. Second, a threefold fragmentation of SOEs is tried in order to elicit more competitive pricing, and third, price cap regulation is imposed to force mark-ups half way to the level sufficient to cover average costs. Finally, the option of opening the services sector to additional FDI is considered and hence of fostering accelerated productivity growth in that sector. It is worth noting that, except for the last, all these scenarios ignore natural innovation and productivity improvements that would continue irrespective of the fiscal or industrial policy regime. As such, these simulations consider policy changes that could offer the major boost to China's GDP that might replace that yielded by export led growth.

Further export led growth

Continued export led growth is illustrated in this simulation by some representative shocks to productivity and a closure that allows rising labour supply. There is a rise in labour productivity in agriculture, to represent its capacity to continue shedding workers, and a rise in total factor productivity in the light manufacturing export sector, to represent the effects of continued FDI into that sector. There is also an arbitrarily low increase in the real production wage, which is made exogenous for this simulation so that the supply of workers to the modern sector can grow. Workers continue to be released by agriculture, foreign capital flows in and expansion is substantial as expected. The results are shown in the first column of Table 5.[17]

Lewis turning point

Here the same shocks are applied, except that there is no productivity gain in agriculture associated with departing workers and the closure is changed so that the supply of production labour is fixed and the real production wage is endogenous. The results are shown in the second column of Table 5. In this case surplus workers are no longer available so that growth then stems from the productivity changes alone and is much reduced. The real production wage rises faster, however, and there is a reduction in the current account surplus due to a decline in pure profits in the protected sectors (in effect, a gain by workers at the expense of capital) and hence a decline in

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[17] Real net income to home capital owners actually falls slightly. This is because total saving continues to increase under this scenario and capital controls are retained. This excess supply of saving is transferred to foreign reserves only incompletely, leaving a decline in the home bond yield.

corporate saving. The current account balances because of the saving change and there is a "natural" redistribution of the SOE rents in favour of working households. If the government can maintain a steady policy hand during this shock, while growth will clearly slow, many of the other structural issues with the Chinese economy are corrected.

Consumption tax financed government expansion

In the long run an expansion of government activity must be tax financed. Here the instrument of choice is the consumption tax. The experiment is an arbitrary increase in the government share of GDP by 25 per cent. It requires an increase in consumption tax revenue by 14 per cent of the tax base. This is a large negative shock that contracts real domestic factor income at new home prices. The results, shown in the third column of Table 5, confirm that home workers and home owned capital are losers and so real GNP contracts. Real GDP rises slightly, however. This is due to the retention of considerable foreign capital, the income from which is not subject to the consumption tax and the fact that the real rate of return on capital rises in terms of foreign prices on the back of reduced real labour costs. The protected heavy manufacturing and services sectors expand in this scenario while private households and workers are worse off.

Corporate tax financed government expansion

If the government expansion is financed from company, or capital income, tax the net effects are as shown in the final column of Table 5. The tax needed to expand the government share of GDP by 30 per cent turns out to be 7.7 per cent of the capital income tax base. Because corporate saving depends on profits it declines, also contracting the current account surplus. Apart from a substantial cut in real income to home capital owners, this policy has little effect on overall real economic activity. Enlarging government, at least via tax increases, therefore offers little real long run expansion under the assumptions of this model.[18] A key to this is the turning inward of demand under the government expansion scenarios which reduces the export share of production and therefore the elasticity of demand facing oligopoly firms. The result is a modest but influential real appreciation in each case that is larger than would arise were there to be no oligopoly behaviour.

Pure privatisation

The first shock simply places the majority of SOE assets in private hands so that profits are distributed to households. The rates of corporate saving across industries are reduced until total

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[18] A separate experiment to measure the effects of a similar expansion that is bond financed finds results that are contractionary of both GDP and GNP in real terms. This result is examined in short run mode by Tyers and Huang (2009), who find that the usual Keynesian expansion is more than offset by oligopoly price increases and the associated real appreciation.

corporate saving falls to a more normal five per cent of GDP.[19] Most after-tax company income then accrues to households and so can be allocated by them to saving or consumption.[20] By itself, as indicated in the first column of Table 6, this reduces national saving and the current account surplus. Other than this, however, the simulation suggests that privatisation generates no substantial growth in and of itself so long as the competition facing SOEs is restricted.[21]

Fragmentation of SOEs

Here SOEs are subdivided within sectors and encouraged to compete on price. This has been a popular approach in some protected sectors, yet the simulation suggests the results are not attractive. A threefold increase in the number of oligopoly firms is imposed in the heavy manufacturing and services sectors the effect of which are shown in the second column of Table 6. The problem with this approach is that, while it does induce more competitive pricing and hence lower mark-ups, each new firm carries fixed costs and so the sectoral fixed cost burden rises sufficiently for prices to rise, lower mark-ups notwithstanding. Because fixed capital is required, the capital stock increases substantially but capital returns are slashed. While production workers gain, domestic capital owners lose and no substantial growth is yielded.

Tighter price cap regulation of SOEs

The results for tighter price caps on SOEs are more positive. Indeed, they suggest that substantial new growth is available from this policy option. In oligopoly industries with fixed costs mark-ups over average variable cost are required to break even. In the simulation, price caps are imposed that would force firms to reduce their mark-ups half way toward the level that would cover average costs. Such price cap regulation appears to have been successful in many industrial countries and the simulation suggests that the effect in China would be to reduce costs in industries whose products are used as intermediate inputs throughout the economy and hence economic activity would be expanded substantially. As indicated in the third column of Table 6, the lower costs help depreciate the real exchange rate, aiding the export sector and, aside from the overall expansion it offers, it unwinds much of the income inequality of recent decades by redistributing rents and raising wages.

FDI induced productivity growth in services

The final simulation considers the effect of a productivity improvement in services of the type that could be delivered by additional foreign investment. The results are indicated in the final column of

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[19] This is the scale of corporate saving in Taiwan. See Tyers and Lu (2008).
[20] It is achieved by shocking down the corporate saving rate (retained earnings rate) so that discretionary corporate income accrues to households.
[21] Had it been assumed that privatization might eliminate x-inefficiency and hence raise productivity by making poor performing firms take-over targets, a one-off growth surge might be expected from this change.

Table 6. The more efficient services sector depreciates the real exchange rate boosting rather than impairing exports and fostering overall growth. The Balassa-Samuelson Hypothesis notwithstanding, there is also structural convergence of the Chinese economy with the industrialised West. The simulation yields substantially higher real wages that benefit both skilled and production workers. These represent higher costs, however, and so they cause a redistribution of industrial output and exports in favour of heavier manufacturing. The Chinese economy continues to open but it is much more reliant than before on intra-industry trade with the West, in the manner of the US and Western Europe.

The difficult politics of internally generated growth

It is clear from the results in Tables 5 and 6 that, for substantial further growth to be found from looking inward, China will need to combine other elements of industrial reform with a more ardent regulatory attack on oligopoly rents. This will be difficult politically, as will the other key element of further growth, namely substantial productivity growth in the primarily state-owned services sector. Achieving this will require levels of FDI in services that parallel those in Chinese manufacturing. Heretofore, the government has opposed foreign ownership in key services and heavy manufacturing industries so allowing such FDI will also be very difficult politically.

6. Conclusion

With the impending end to export led growth and conflicts due on the one hand to rising domestic inequality and, on the other, to recently high current account surpluses, China is in need of a further stage of transformative growth that will maintain the pace of its catch-up and address its internal and external conflicts. One inevitable transformation to come stems from the Lewis turning point. Its arrival will see accelerated real wage growth and hence the fruits of further growth will be less concentrated and, since this will raise the share of total income available to households, the corporate share of saving should fall. This, in turn should reduce the overall saving rate and the current account surplus. It will, of course, bring with it the need for costly adjustments since, as shown in the previous section, growth will slow and the supply of new labour to the heretofore efficient and relatively competitive light manufacturing sector will gradually dry up. Moreover, the net benefits from China's growth that accrue to the global economy will also decline. Yet if, as some believe (Garnaut 2010), this transition is imminent, the silver lining it brings will be reduced political pressure from at home and abroad and hence less incentive to abandon the heretofore successful market oriented policy regime.

But there remains the matter of sustaining the overall growth rate and that of an orderly transition. As to the latter, both the Republic of Korea and Taiwan made orderly economic transitions away from dependence on the transformation of their labour forces via labour intensive exports. Political transformations toward liberal democracy also occurred in both, commencing as their urban middle classes assumed numerical majorities. Of course, they were helped in this by the stimulus associated with China's own growth surge. Japan's initial transition was orderly, surviving the oil and commodity crises of the 1970s, but it was subsequently disrupted by policy errors during the 1980s and early 1990s. Japan's comparatively liberal democracy could not chart those waters effectively even with the growth of China on its doorstep. Now China must do so, but without the external stimulus associated with a growth surge in a large near neighbour.

As for moderating the growth slowdown, a further source of transformative growth is required to avoid a rapid and possibly disruptive slowdown. This issue is here addressed via simulations of a 17 sector model of the Chinese economy that takes explicit account of oligopoly behaviour of SOEs and a database that captures essential economic structure, namely a largely competitive light manufacturing export sector and oligopolistic heavy manufacturing and services dominated by SOEs. The results suggest that further transformative sources of growth do exist but, to exploit them, China's government must dig deep and produce industrial reforms that reduce the rents that currently concentrate economic gains while at the same time welcoming FDI into its hitherto protected service industries. The benefits available are considerable, not only including final steps toward real per capita income convergence with the West but also reduced inequality and stronger more externally engaged heavy industry and services.

While delivering this will be a tall order politically, China's governments since the early 1980s have faced constant political and economic challenges and they have thus far been effective. The fundamentals behind Chinese growth to date seem sound and the obstacles to continued transformation are known to the government and its branches (Economist 2011). The continuing external clamour for greater consumption is essentially xenophobic - tantamount to demands that the Chinese should invest less and have their economy perform more poorly. A strong Chinese economy and a smooth economic transition is in the global collective interest and it will require that Western political pressure is restrained. At the same time, the Chinese are in a better position to learn from the Japanese experience and resist external pressure for economic policy changes that are not beneficial domestically.

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Table 1: Structure of the Chinese Economy, ca 2005[a]

Per cent	Value added share of GDP	Share of total production employment	Share of total exports	Pure profit share of gross revenue
Agriculture	13	24	2	0
Petroleum, coal, metals	16	11	10	20
Light manufacturing	29	33	82	5
Services	42	32	6	20
Total	100	100	100	12

a Pure profits are calculated from national statistics estimates of accounting profits, deducting required returns to service industry specific prime rates. Here they are presented gross of tax and corporate saving and as shares of total revenue.
Source: Model database, derived from Dimaranan and McDougall (2002), and an updating of the national data to 2005.

Table 2: Model Scope

Regions	China
	Rest of world

Primary factors	Land
	Natural resources (mineral, energy deposits)
	Skilled (professional) labour
	Unskilled (production) labour
	Physical capital

Industries	Agriculture
	Metals, including steel, minerals and (non-coal) mining
	Coal mining and production
	Petroleum production and refining
	Processed agricultural products
	Electronic equipment
	Motor vehicles
	Chemical, rubber, plastic products
	Textiles
	Other manufactures
	Electricity supply and distribution
	Gas supply and distribution
	Telecommunications
	Insurance and finance
	Transport
	Construction
	Other Services

Source: Aggregates of the 57 industry GTAP Version 6 database from Dimaranan and McDougall (2002).

Table 3: Factor Intensities by Industry[a]

	Capital	Production labour	Skilled labour	Land and nat resources
Agriculture	11	59	0	30
Metals & minerals	66	27	5	2
Coal	28	30	3	39
Petroleum	86	5	1	7
Processed agriculture	38	54	7	0
Electronic equipment	66	26	8	0
Motor vehicles	59	35	6	0
Chemical products	62	32	6	0
Textiles	40	52	7	0
Other manufactures	68	27	5	0
Electricity	69	21	11	0
Gas mfg & distribution	49	37	14	0
Communications	92	5	3	0
Insurance and finance	80	12	8	0
Transport	78	18	4	0
Construction	56	37	7	0
Other Services	54	27	19	0

a These are factor shares of total value added in each industry, calculated from the database. Capital shares include pure profits. Shares sum to 100 per cent horizontally.
Source: Model database (social accounting matrix), derived from Dimaranan and McDougall (2002).

Table 4: Initial Demand Shares, Elasticities and Mark-ups[a]

	Demand shares, %					Demand elasticities					Average demand elasticity	Industry mark-up[b]
	Inter mediate	Final	Export	Invest ment	Govt	Inter mediate	Final	Export	Invest ment	Govt		
Agriculture	53	40	4	3	0	-10.2	-28.6	-40.1	-15.6	-16.0	-18.8	1.06
Metals, Minerals	84	3	10	2	1	-2.9	-4.4	-8.9	-2.8	-2.8	-3.5	1.39
Coal	61	4	33	0	2	-3.6	-6.1	-11.2	-2.4	-2.5	-6.2	1.19
Petroleum	58	12	5	14	12	-2.1	-2.8	-6.2	-2.3	-2.1	-2.4	1.69
Proc agriculture	50	34	15	0	1	-12.0	-30.8	-26.8	-16.4	-17.0	-20.7	1.05
Electronics	24	4	65	6	0	-2.7	-6.4	-9.8	-2.9	-2.9	-7.5	1.15
Motor vehicles	46	8	15	29	1	-4.8	-10.0	-16.9	-3.4	-3.7	-6.6	1.18
Chemicals	77	6	17	0	0	-3.6	-6.3	-10.4	-2.5	-2.5	-4.9	1.26
Textiles	45	11	44	0	0	-6.5	-16.9	-25.7	-10.4	-10.2	-16.1	1.07
Other mfg	43	5	35	16	0	-2.6	-7.1	-9.5	-4.0	-4.0	-5.5	1.22
Electricity	84	13	1	1	1	-6.4	-12.3	-21.0	-7.5	-7.7	-7.3	1.16
Gas mfg & distn	50	10	0	8	32	-4.9	-7.7	-13.4	-4.8	-4.9	-5.2	1.24
Telecommunications	42	24	1	5	27	-1.7	-1.4	-5.1	-1.5	-1.7	-1.7	2.45
Finance	57	29	2	3	8	-1.8	-2.6	-6.6	-2.2	-2.2	-2.2	1.86
Transport	53	18	8	7	14	-1.3	-1.6	-5.9	-1.6	-1.5	-1.8	2.26
Construction	4	2	0	86	8	-2.5	-5.1	-12.3	-4.4	-4.0	-4.3	1.30
Other Services	46	21	4	4	25	-3.4	-8.6	-11.7	-3.1	-2.8	-4.7	1.27

a All these variables are endogenous in the model. Initial (base) values are provided here.

b Industry mark-ups are the ratio of producer prices and average variable costs.

Source: Model database, derived from Dimaranan and McDougall (2002) and 2005 national statistics.

Table 5: Simulated Export Led Growth and Government Expansion Effects[a]

Per cent changes	Continued export led growth[b]	Export led growth beyond the Lewis turning point[c]	Government expansion G/Y up by 25%, consumption tax financed[d]	Government expansion G/Y up by 30% company tax financed[d]
Real GDP	16.6	4.9	2.6	-1.7
Real GNP	9.3	3.9	-8.9	0.6
Real exchange rate	1.3	3.5	1.3	2.0
Exports / GDP	19.1	5.8	-7.9	-10.0
Consumption / GDP	-8.7	-2.9	-2.1	0.8
CA surplus / GDP	17.0	-3.2	-4.4	-2.4
Production employment	17.7	0.0	0.0	0.0
Real production wage	2.0[e]	7.2	-3.5	-3.3
Real skilled wage	18.4	4.1	-1.5	-0.7
Physical capital stock	19.8	5.3	-1.4	-1.5
Real hm capital income[f]	-3.8	-3.2	-13.6	-7.1

a These simulations are all made in long run mode – endogenous capital stock with exogenous external rate of return on excess saving and perfect mobility of workers between agriculture and the other sectors. The number of oligopoly firms is fixed, however, so that pure profits are endogenous.
b This simulation retains the existing policy regime and applies 4% labour productivity in agriculture, to continue to release workers, and 4% productivity in light manufacturing (the export sector) due to continued FDI, combined with an exogenous rise in the real production wage of just 2%. Modern sector labour supply therefore rises substantially.
c Here the agricultural productivity rise is not imposed and the supply of production workers is fixed.
d These simulations represent tax financed fiscal expansions which raise the government spending share of GDP by a quarter in the case of consumption tax financing and a third in the case of capital income tax financing.
e In the export led growth case the real production wage increase is an arbitrary and exogenous 2%.
f Real home capital income is the income accruing to domestically owned capital net of tax and depreciation.
Source: Simulations of the model described in the text.

Table 6: Simulated Industrial Reforms and Expansion Potential[a]

Per cent	Pure privatisation of SOEs[b]	Pure splitting of SOEs - three fold fragmentation[c]	Price caps on SOE oligopolies[d]	Services driven growth - 4% productivity
Real GDP	0.6	-12.9	28.3	15.9
Real GNP	0.8	-13.8	13.0	6.5
Real exchange rate	1.2	2.9	-8.2	-6.6
Exports / GDP	-10.6	-17.2	42.9	22.3
Consumption / GDP	13.2	17.6	-12.0	-7.0
CA surplus / GDP	-61.9	-143.3	80.4	48.7
Real production wage	-0.2	15.6	30.4	19.4
Real skilled wage	0.9	-1.6	42.1	21.8
Physical capital stock	-0.4	26.4	28.3	16.9
Real hm capital income[f]	-0.7	-50.0	4.4	3.2

a These simulations are all made in long run mode – endogenous capital stock with exogenous external rate of return on excess saving and perfect mobility of workers between agriculture and the other sectors. The number of oligopoly firms is fixed, however, so that pure profits are endogenous.

b Pure privatisation requires that all corporate income after tax should accrue to the collective private household and be split between consumption and saving at private rates.

c The number of firms is enlarged three fold in heavy manufacturing and services.

d Price caps alter the pricing formulae of oligopolistic firms, forcing them to halve their mark-ups over their average costs.

f Real home capital income is the income accruing to domestically owned capital net of tax and depreciation.

Source: Simulations of the model described in the text.

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