Economic implications of demographic change
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- According to United Nations projections, a demographic revolution has been underway for more than half a century and will likely take several more generations to complete. Yet China and the more advanced economies, which account for the vast majority of the world’s economic and financial activity, face an important inflection point, similar to the ones that confronted Japan and Germany in the mid-1990s: population growth is decelerating sharply and, in China and much of the economically advanced world, is turning negative. Moreover, dependency ratios are rising, after a long period of stability or decline.

- We highlight four ways in which this inflection point, as well as disparities within the multi-generational trend, could affect the next decade: 1) complicate the task of fiscal consolidation, mainly through a rise in age-related public spending. The good news here is that the most heavily affected economies are not the fiscally stressed economies of the eurozone; 2) support the process of economic rebalancing in China while magnifying the challenge of shifting the economy away from its investment-led development pattern; 3) complicate the debt dynamics of southern Europe, where population growth is poised to turn negative; and 4) potentially tilt the terms of trade in favour of labor in the US, after two decades in which labor income lagged returns to capital.

- However, contrary to what Japan’s experience might seem to suggest, we do not think demographics will be the decisive influence on the balance between inflationary and deflationary forces in the decade to come.

What’s happening to populations?

Humankind is living through its most momentous demographic transformation in recorded history, though it will likely take several more generations before a new steady state emerges. In the meantime, the investment landscape will continue to be conditioned by the gradual and uneven transition to a new equilibrium.

There are many elements of continuity in the dynamics set to form the backdrop for economic developments in the decade ahead. Populations will continue to age, as they have mostly been doing for half a century, and population growth will continue to slow. In
In some ways, the next 10 years should look a lot like the past 10. But in other respects, populations are facing an inflection point that could shift the economic and financial context significantly.

The population revolution in a nutshell

Population change is fundamentally about birth and death, and in the past half-century both have been transformed in most of the world. Improvements in health care, reflecting rising living standards and improved technology, have led to large rises in life expectancy in most advanced and emerging economies. At the same time, prosperity, technology and, in some cases, policy, have led to a large fall in birth rates.

These fundamental drivers have created a population dynamic that is being felt globally (although with important differences that we discuss below): after rising rapidly in response to falling mortality rates, the decline in the birth rate eventually leads to a population that grows more slowly as it steadily ages.
The dependency ratio – conventionally defined as the ratio of the number of young (below 15 years of age) and elderly (65 and older) persons to those of working age (15-64) – tends to follow a ‘U’ shaped path, declining in the early stage of the demographic transition as the lower birth rate reduces the number of children needing support. Later in the transition, the rising share of the elderly leads to a rise in the dependency ratio.

In the past two decades, the dependency ratio has been either stable (US, euro area) or declining (emerging markets, including China) in most of the world, with the major exception of Japan, where the dependency ratio has risen significantly in the past decade.

This interplay between falling birth rates and rising life expectancy is about as universal an influence over world development as exists, and on a long enough time horizon, population dynamics are likely to be marked by a strong common thread. But on a more immediately relevant (although still extended) time horizon of 10–15 years, the landscape is far more variegated, and the influence of population dynamics on the world economy and financial markets is likely to reside less in broad global tendencies than in the specific developments and circumstances in the more economically influential regions.

**Advanced economies are in the demographic vanguard**

Largely reflecting their more advanced stage of development, with timing also influenced to some extent by the ‘baby boom’ that followed the economic and social disruption of the Second World War, the advanced economies of Japan, continental Europe, and, less markedly, the US and UK, are at the forefront of the global demographic transition. Japan and Germany are the oldest societies in the world, with much of continental Europe not far behind (Figure 6).

Japan and Germany have been the forerunners of lower population growth; in both countries, the working age population has been falling for roughly 20 years (Figure 7). This gives them considerable interest as precedents for other countries facing the same prospect. And such precedents are becoming increasingly relevant. In the past decade, Germany and Japan were nearly alone in population decline, joined by only a few countries, including Greece, and a few members of the former Soviet bloc, where population growth has been undercut not only by a fall in birth rates, but by a period of stagnation, and even decline, in life expectancy dating back to the mid-1970s. In the coming decade, however, falling populations are set to become much more common. Eastern Europe looks likely to overtake Germany and Japan as the region with the fastest-shrinking working age population (Figure 8).
The shrinkage of the working-age population is set to be less rapid in Western Europe, though it will be quite generalized, with France and the UK alone among the major European economies not expected to post a decline in the coming decade (the forecast decline for Spain is quite modest).

The decline in China’s workforce has begun, and although it is expected to be considerably more gradual than it was in Germany and Japan, it will likely have a greater impact given China’s key role in the global economic and financial system. Korea is also facing a very abrupt transition. Its working age population is expected to peak within the next 2-3 years, then decline on a trajectory not dissimilar to Germany’s. Korea and Thailand also stand out for the speed at which their populations are aging (Figure 6).

China merits special attention in this area because of its systemic importance and the special character of its demographic development. Because of the one-child policy, China’s birth rate fell far in advance of its development trajectory (Figure 1). Thus, its population is aging more rapidly and shrinking at a far earlier stage of economic development than elsewhere. Below, we highlight the characteristics of the Chinese demographic transition stemming from this atypical history.

First, although the working age population is falling at a much earlier point in China’s economic development than occurred in Germany or Japan, the rate of shrinkage is set to be much smaller than it has been in those countries (Figure 7). That said, the deceleration of population growth from a rather rapid rate in the past 10 years to a modest rate of decline in the coming decade looks quite abrupt (Figure 8) and comparable to the deceleration in Japan in the early 1990s. To the extent that economic consequences result from the deceleration of population growth, as we shall suggest that they do, China faces a substantial demographic shock, despite the modest rate of decline in the population.

Second, although China is aging rapidly, it started out with a relatively young population. So even after 20 years of this atypically rapid rate of aging, the Chinese population will not stand out as abnormally aged by global standards (Figure 6). In fact, although the Chinese dependency ratio is forecast to rise substantially in the decades to come, it is expected to remain quite low by international standards (Figure 5).

Finally, it should be noted the difference between the Chinese experience and that of Germany and Japan lies not only in the level of development at which their populations began to decline, but also in the fact that China’s development has followed a qualitatively different path. These differences are likely to affect the manner in which the demographic transition influences the Chinese economy. For example, the conventional model of...
retirement presumes that the generation leaving the workforce has saved for retirement during the working years, owns much of the national wealth, and spends it over the course of the retirement years. But given the speed of the (largely state-directed) development during the past two decades, this model may not fit present Chinese realities as well as it might an economy with a more extended period of less frenetic development (eg, the benefits of the rapid Chinese modernization may be accruing to younger workers who may not retire for many years).

How flat is the earth?

There is a common demographic dynamic that seems to be playing out on a multi-generational time scale globally. But on a timeframe more relevant to market participants, the diversity is as important as the common trend. The most important divergence is between lower-income emerging market economies that comprise most of the world’s population and the economically more advanced economies, including China, where a disproportionate share of the world’s economic activity is located.

In most of the economically less-advanced regions of the world, the drivers of the demographic transition are playing out according to the script; life expectancy is increasing and birth rates are falling. But in Africa, Latin America, India and much of the rest of Asia, the transition is in an early stage. Populations are getting older and the elderly more numerous, as they have been doing for decades, but dependency ratios should continue to fall for at least a decade (Figure 5). And although population growth is slowing, both total and working-age population will continue to rise for decades to come (Figure 3). There is no sense in which these societies have reached a demographic inflection point. And because they have such large populations, they are likely to keep the world population rising in the coming decades (Figure 3).

The outlook for the economically (and demographically) more advanced regions of the world is quite different, and there are at least two important ways in which this part of the world faces a demographic inflection point akin to the one that Japan and Germany reached in the 1990s. First, growth of the total and working-age populations is projected to decelerate sharply (US, France, UK) or turn negative (China, Japan, Korea, and much of continental Europe). For this group of economies as a whole, population growth has turned negative (Figure 3). Second, dependency ratios are now rising, after decades of stability (US, euro area) or declines (China, Eastern Europe) in the ratio (Figure 5).

The vast majority of the world’s economic and financial activity takes place in the advanced economies, where demographic challenges loom fairly large. This is likely to remain the case for the next decade. The question arises whether the more favourable demographic context in less advanced economies can provide a meaningful offset to, in particular, the shrinkage of the labor force that is in store for the more advanced economies. It is not a far-fetched
scenario; below, we suggest that the emergence of China as a global manufacturing powerhouse created just such a shock for the global labor force in the past two decades. At present, though, an event comparable to the Chinese development surge of the past 20 years seems unlikely. And to the extent that demographic influences are global rather than national, we think the relevant context is the more constrained demographic outlook facing the economically more advanced parts of the world. That said, we think investors should be alive to the opportunities that global population dynamics present for younger and more rapidly growing populations, and the associated possibility that a more rapid than expected integration of labor forces in India, Africa, or elsewhere into the global workforce could temper some of the challenges posed by demographic transitions in the more advanced economies.

It’s complicated

Demographic change is multi-dimensional, encompassing the size as well as the age distribution of the population. Different elements of the demographic transformation are likely to interact differently with economies and financial markets. The age structure will affect savings behaviour, but it will also affect investment demand, and it may do so not only by changing the age distribution but also the rate of growth of the population. Population trends affect not only aggregate demand, but also supply, when there is a substantial impact on the potential labor force. Asset allocation may also be affected by demographic developments. International spillovers are likely to be significant when the affected economy is systemically important.

These complexities make us reluctant to summarize the demographic state of the world into a number or two, or to extrapolate from previous correlations the future impact on economies and financial markets. Instead, we highlight ways in which key demographic developments are likely to drive important economic and financial outlook in the decade (or so) to come. In some cases, population trends take center stage, and in others they play a supporting role. But in each of the cases that we consider, bar one, population trends will be a key driver of the outcome.

Population change will stress fiscal structures

Population aging constitutes a source of vulnerability for fiscal sustainability in many advanced economies, but also in emerging markets, in the longer run. On top of the expected decline in tax revenues, as result of a shrinkage in the working age populations, growth rates are expected to decline, driving down the interest rate-growth rate differential, which is an important indicator of a country’s ability to keep its debt levels sustainable (particularly in EM, according to the IMF1), over the next two decades. But perhaps a less-discussed effect of older populations, which is far from negligible, is the rise in public spending on healthcare and pensions, in addition to other possible age-related spending (such as residential care in some countries) and the direct impact of these on government balances. In the advanced economies, public health spending has risen by about 4p of GDP since 1970, about half the overall increase in non-interest public spending. According to IMF projections, total age-related spending is expected to grow by more than 4% of GDP in advanced economies and 3.2% of GDP in emerging markets by 2030, after accounting for the large fiscal consolidations already at work and those in the pipeline. For advanced economies, this number is almost equal the required fiscal adjustment that countries will have to undertake by 2030 to stabilize their debts. For emerging markets, it is three times the adjustment they would have to make without the aging factor.

In the past 3-5 years, public expenditure on health, which is the largest portion of age-related spending in advanced economies, actually slowed significantly (in all advanced economies except Japan and Israel). This is not surprising; advanced economies experienced a sharp deterioration in macroeconomic conditions after 2008/9, which can

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1 IMF Fiscal Monitor, October 2013
explain a lot of this slowdown, in addition to large fiscal consolidations that naturally included cutting public health expenses. Indeed, according to the IMF analysis, those countries that suffered the largest drop in output and undertaken large fiscal consolidation, namely the euro periphery countries, have also experienced the largest declines in health spending. Another interesting turning point of the past couple of years consisted of large-scale reforms aimed at cutting spending. Yet these spending-reduction reforms will most likely have no impact on long-term spending growth.

The recent years' slowdown may still have a persistent effect, as continued fiscal pressure and still-weak macroeconomic conditions will leave their mark. As Figure 10 shows, by 2030, the euro area countries are expected to show the lowest increase in public spending on health. However, as is evident in the chart, when stripping out the overall projected increase in health spending from the portion unaffected by aging (ie, the growth in public health spending in excess of GDP growth, after controlling for aging), the expected increase in spending in these countries is much more similar to other advanced economies. In other words, the impact of demographics is hardly mitigated by cyclical factors such as temporary slowdown in macroeconomic conditions, fiscal consolidations and so on.

The differences among countries in the size and type of the expected increase in age-related spending are large (Figure 11). The US, where the demographic prospects are considerably less pressing than those in, for example, Japan and the euro area, is nevertheless expected to face a huge increase in age-related costs by 2030, mostly because of a large projected increase in healthcare spending (accelerated by the national healthcare reforms). The increase of 4.8% of GDP in age-related spending, which is in line with the most recent (2013) projections of the US congressional budget office (under the assumption that subnational spending grows at a similar rate as federal health spending), will more than double the overall adjustment the US needs to undertake by 2030. China is another example of a country where, despite less imminent demographic problems, the age-related spending increase is expected to far exceed those countries with much older populations, like Japan and Germany. This is mainly because of the large costs of transitioning its pension system from focusing on formal-sector workers to a more universal coverage. The dramatic reform that was introduced in 2009 brought millions of additional people under the public system coverage, and that number will continue to increase, alongside the increase in the ratio of pension-aged people to the total population.

The two most striking cases of expected increase in age-related spending are Korea and Turkey. Were it not for the large adverse effect of aging, both would have had enough fiscal space to expand their budgets over the next two decades. Turkey is surprising: with a still-young population (median age is 29, the second youngest in the OECD), the government is already spending on public pensions the same proportion of GDP as the US, and more than the UK, Denmark and Netherlands, despite all these countries having 2-3 times as many people over 65 relative to their populations as Turkey does. In Korea, this is mostly driven by an expected surge in public expenditure on pensions, the result of a rapidly developing country where a public pension system was introduced only in 1988, and the ratio of pension-aged population (65+) is expected to rise faster than in any other country (an increase of 11.2pp in 2013-30, compared with 6.2 in the US, 5.6 in Japan, 7.3 in China, 7.6 in the Netherlands, 7.1 in Germany and lower levels in the rest of the eurozone). In 2009, the expenditure of the Korean government on pensions was the lowest in the OECD (after Iceland) and it is projected to catch up fast. In France and Italy, where the rise in the ratio of elderly to total population is expected to be fairly moderate (5.4 and 5.6pp), should face very muted rises in age-related spending in the same period.

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Demographics and rebalancing in China

The rebalancing imperative for China is in the most important respects unrelated to its population dynamics. China’s development trajectory would be “unsteady, unbalanced, and unsustainable” even if it were not facing a demographic inflection point. But demographic pressures will play a significant role in the rebalancing process. In key respects, the demographic transition supports the rebalancing strategy. But in other ways, demographic developments in the pipeline increase risks around the rebalancing agenda.

Population dynamics are a key part of China’s much-discussed ‘Lewis moment’1. The sharp slowdown in growth of the working-age population has interacted with 20 years of rapid growth in labor demand to exhaust much of the surplus labor available to be shifted from low-productivity rural employment to higher productivity, mainly urban occupations. The continuing decline in the working age population should help maintain tight labor markets and keep upward pressure on real wages. To the extent that the rebalancing agenda requires an increase in household income to support the consumption spending that is needed to replace investment as a driver of domestic demand, this aspect of the demographic transition provides a strong economic tailwind.

The aging of the population should also support the rebalancing from investment to consumption. Cross-country evidence (see, for example, IMF World Economic Outlook, September 2004) suggests that countries with higher proportions of elderly tend to have lower savings rates. (They also tend to have lower investment rates, but the impact on saving was found to be larger.) We are not sure that the cross-country evidence adequately captures the special characteristics of the Chinese case, but the idea that aging of the population supports a lower saving rate is at least qualitatively plausible.

But China’s population dynamics also pose a risk to the rebalancing agenda. It stands to reason that demography affects investment demand not only through its impact on the age distribution, but also via the rate of increase of the population. One source of demand for investment is to maintain the per-worker capital stock, and to accommodate trend growth in

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1 A ‘Lewis moment,’ named after Nobel Prize-winning economist Arthur Lewis, refers to the period in a country’s development when labor demand associated with industrialization has absorbed all the surplus labor previously engaged in lower-productivity occupations in the countryside. Before the Lewis moment, industrial firms can hire workers at a wage determined by the low-productivity occupations in rural areas. After the Lewis moment, wages tend to rise with productivity in the modern sector.
demand for output. If population growth slows, this source of demand for investment declines as well. To see how big this could be, note that along a steady-state growth trajectory, net investment has to be sufficient to maintain a steady ratio of capital to labor. The investment rate required to achieve this is equal to the rate of population growth times the capital-output ratio. In the US and Japan, the replacement cost of the capital stock is roughly 2 times GDP. So a 1% deceleration in the rate of growth of the population implies a (permanent) decline in required investment of about 2pp of GDP. (We are unaware of any estimates of the Chinese capital stock, but in light of the investment-intensity of Chinese growth the capital-GDP ratio is likely higher, and the demographic multiplier at least as high, as in Japan.)

While Japan and China are very different in many ways, the parallel with the initial stage of the Japanese ‘lost decade’ seems apposite to us. The bubble economy of the 1980s promoted an investment boom of 3-5% of GDP that needed to be ‘worked off’ in the post-bubble era (Figure 12). Finding substitutes for the lost demand was the Japanese ‘rebalancing’ challenge, and it proved difficult to accomplish (not least because the adverse shocks kept coming; see Chapter 1, “Japan-style deflation in Europe getting harder to dismiss”).

In our view, the Japanese ‘rebalancing’ problem of the 1990s was compounded by a steady decline in underlying investment demand that resulted from the increasingly rapid rate of shrinkage of the working age population. How big might this have been? The working age population is now shrinking at the rate of about 0.9% per year, compared with growth of about 0.5% of GDP before the mid-1990s. The 1.5pp swing in population growth could therefore (in line with the arithmetic described above) generate a 3pp decline in the ‘equilibrium’ Japanese investment ratio. This is not small by comparison with the magnitude of the cyclical over-investment that needed to be accommodated in the early 1990s, and it helps explain why Japanese investment has stabilized well below its pre-boom level, even as the economy has regained its cyclical poise.

The downside risk for the Chinese rebalancing seems clear. The slowdown in population growth is less intense than it was in Japan, and the Chinese authorities have policy levers that Japanese authorities did not have. But the investment boom that needs to be ‘worked off’ is probably substantially larger than the one that confronted Japan in the early 1990s. The demographic risk to investment is not the main policy problem facing Chinese authorities, and it certainly does not put a reasonably smooth transition out of the country’s reach. But it raises the stakes in achievement of the structural transformations required to secure a more balanced growth trajectory.

**FIGURE 12**
Japanese investment stabilized below pre-boom level...

**FIGURE 13**
...despite recovery of the economy
Demographics compound euro area fiscal stress

Demographic trends will affect national budgets in several ways. One of the most important of these is the anticipated rise in age-related spending, discussed above. A reassuring finding of that discussion is that the fiscally stressed economies of the eurozone are not the most heavily affected. In general, the economies at most risk happen to be those where, rightly or wrongly, market participants view fiscal challenges as manageable, such as the US, New Zealand, and Korea.

But population dynamics may also affect the sustainability of public debt if the anticipated deceleration in the potential labor force results in slower growth of national income and, by extension, the tax base. All else equal, including the interest rate at which the debt is serviced, a slowdown in trend growth requires an increase in the primary fiscal surplus equal to the change in the rate of growth multiplied by the magnitude of the public debt.

Figure 14 highlights the deceleration of growth in the working age population forecast for a number of eurozone economies. As we highlighted above, most euro area economies are expected to experience declines in the working age population. The rate of decline will be comparable to the one that Germany has experienced in the past 15 years, but the German population will continue to decline most rapidly.

In Figure 15 we illustrate the impact on the required fiscal effort, on the implied assumptions that the interest rate and productivity growth are unaffected by the deceleration of growth in the potential workforce. We compute the effect using the recent historical ratio of debt to GDP; in those countries, like Spain, where debt is expected to continue rising for the next few years, these estimates are conservative.

The impact is largest in Spain, because it suffers the largest deceleration in the rate of population growth. The impact amounts to about 1pp of GDP; modest by comparison with the very large fiscal consolidation that has been required of Spain, but far from trivial. The demographic transition in Portugal, Italy and Belgium also require a meaningful fiscal effort, in excess of 0.6% of GDP.

Each of these countries faces other challenges and opportunities to maintain or restore fiscal sustainability, which will also be influenced by a restoration of full employment, an improvement in trend productivity growth, and by institutional adaptations that improve confidence and lower interest rates. Demographic factors may be secondary compared with the fiscal imbalances that accumulated during the credit boom of the early 2000s, and the stresses that have been generated by the ensuing economic downdraft. But they are large enough to deserve careful consideration by investors in the affected economies.
The end of the global labor glut and the return to capital

Few events have been as consequential for world financial markets as the two-decade boom in US corporate earnings that began in the early 1990s. This was largely unexpected in the early 1990s, when the profitability tide turned, and it has been the object of surprisingly little economic investigation. The rise in corporate profits as a share of GDP (Figure 16) has quite likely been aided by the participation of US businesses in faster-growing economies outside the US. But this did not make the past 20 years one of ‘win-win’ for capital and labor. The rise in corporate profitability is clearly associated with an unprecedented degree of pressure on the return to labor (which we measure in Figure 16 with the ratio of unit labor costs divided by the price of output in the non-farm business sector).

There are a number of explanations for the pressure on US labor markets that has been so closely associated with the strong performance of capital income. Here, we focus on developments in the world labor market.

Labor markets are largely regional, but in a world knitted together by international trade, regional or national labor markets are also indirectly but strongly linked, and labor market conditions depend not only on local but also on global developments. Figure 17 illustrates developments of the past decade and the outlook for the global labor supply (more specifically, the working-age population in the six largest manufacturing powers, the US, China, Japan, the eurozone, the UK and Korea). The chart highlights the abrupt deceleration and imminent decline in the working age population that we have already discussed.

In our view, this chart underestimates the magnitude of the labor market shock during 1990-2010 because that was when the Chinese labor force transitioned from almost complete isolation from the world economy to become an integral part of the global manufacturing workforce. To illustrate what this meant for the global labor force, we made an adjustment to the Chinese data, multiplying it by 0.5 in the years before 1985 (to reflect China’s weak integration in the world economy), and by 1.0 in 2005 and after (reflecting China’s full integration by then), with the interim weight rising along with the exposure of the Chinese economy to international trade.

Source: Haver Analytics, Barclays Research

Note: We include the US, Japan, euro area, UK, China and Korea in the data. The unadjusted data is the sum of the working-age population in these economies. The adjustment is described in the text. Source: UN, Haver Analytics, Barclays Research.
This is an ad hoc and purely illustrative approach, but we think it captures an important element of the Chinese development ‘miracle’ of the past two decades. It suggests that the pressure on labor markets in advanced economies was due, at least in part, to rapid growth in the effective supply of labor in key manufacturing regions. More to the point, it highlights that this influence is now reversing course, as the labor force shrinks in China and many advanced economies. The coming decades could as a result be much friendlier for labor, and hostile for returns to capital, than the past two have been. The adverse cyclical overhang from the 2008 financial collapse, the 2010 eurozone confidence crisis, and the ongoing rebalancing of the Chinese economy continue to keep labor markets weak. But as these influences fade, we think investors should look to the secular trend in returns to capital with some caution.

Demographics and deflation – or not?

A lesson that many market participants seem to have learned from the Japanese experience is that an abrupt demographic transition is bad for the economy, creating strong deflationary tendencies. We do believe that the sharp transition in population dynamics in Japan, and in particular the shrinkage of its working age population since 1995, was one of the ‘shocks’ that undermined economic performance in the 1990s, and helped set the stage for the decade and a half of deflation from which Japan seems only now to be emerging (see Chapter 1).

In this context, the question arises whether the coming demographic inflection point that now faces most of the advanced economies will be similarly deflationary. We are sceptical, and think that demographics will be only one of several drivers of the inflationary (or deflationary, as the case may be) context in advanced economies, and likely not the decisive one.

Circumstantial evidence of a link between deflation and demographics is not hard to find. In Japan, the evolution of deflation is strikingly correlated with demographic trends (Figure 18). In a 2012 speech, BOJ governor Shirakawa suggested that there seems to be positive correlation between population growth and inflation in advanced economies. (We reproduce these findings in Figure 19.)

We think there is less to this evidence than meets the eye. A close examination of the Japanese experience suggests that the demographic shock was only one of a series of shocks and policy choices leading to deflation. The cross-country correlation between population growth and inflation in the OECD is largely driven by two outliers, Japan (the country with negative inflation in Figure 19) and Turkey (the country with 8% inflation in...
Figure 19), and does not survive the incorporation of non-OECD countries, such as Russia, where demographics have been weak and inflation high by international standards. The association between demographics and deflation is also quite weak in the other demographic trailblazer, Germany (Figure 20). Like Germany and Japan, Ukraine experienced persistent declines in population during the past decade, and this has been combined with both very high and (more recently) low inflation (Figure 21).

At a theoretical level it is possible to identify deflationary consequences of demographic advance. As discussed in the context of China, slower growth in the potential workforce may lead to a reduction in investment demand. Politics may also play a role, eg, if older societies become more inflation-averse because the median voter is more reliant on fixed income. We suspect that this was an important, though not the only, driver of weak economic performance and therefore deflation in Japan during the 1990s.

But contradictory influences are equally easy to find. Aging (or, more generally, a rise in the dependency ratio) may be associated with lower investment, but it is also associated with lower savings. The net effect of the shift in savings and investment on domestic demand is uncertain, in principle, and on some estimates, the saving effect is larger (see IMF World Economic Outlook, September 2004). Inflation depends on supply as well as demand, and a sharp reduction in the labor force comprises an adverse supply shock that may put upward pressure on labor costs and price inflation. This is likely to remain an important factor in the development of the Chinese economy, as we have argued. In addition, the rise in the ratio of dependent population to the working population may create fiscal stress; to the extent that fiscal theories of price level apply, this fiscal stress could be associated with an eventual intensification of inflationary tendencies.

Above all, demographic factors generally play out over a timeframe over which monetary policy – even with its ‘long and variable lags’ – can make its influence felt. These shifts in population are only one of the disturbances that monetary authorities are forced to confront, and their effect on the inflationary context is uncertain and quite likely conditional on economic structure and specifics of the demographic transition. The Japanese experience offers an interesting precedent, but it seems to us that the association between demographic advance and deflation is a lesson that some observers may have learned too well. We would look elsewhere for dominant drivers of the inflationary context in the decade to come.

### Figure 20
Germany experienced no deflation, despite weak demographics

- Germany HICP exc. Unprocessed food & energy (% y/y, LHS)
- German working age population (% y/y, RHS)

Source: Haver Analytics, UN Population Statistics, Barclays Research

### Figure 21
In Ukraine, persistently weak demographics have been combined with both high and low inflation

- Inflation (% y/y CPI, LHS)
- National savings (% GDP, LHS)
- Working age population (Thous. RHS)

Source: Haver Analytics, UN Population Statistics, Barclays Research
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