



28 February 2011

The Investigator

Youth Bulges and equities

An unorthodox think-piece

Recent events in the Middle East have captured the world's attention. Many factors are at work in the evolution of this crisis including a large youth population ('youth bulge'). We also believe that the youth bulge is set to change for the better in coming years, not just in the Middle East but globally, which should be bullish for equities.

Equity bull markets tend to emerge when conflict dissipates

In this report, which draws on data from the UN and other sources, we look at demographic trends. They suggest to us the probability of reduced conflict in the years ahead, which has been historically a significant positive for equity markets. The youth bulge – a prime cause of unrest and conflict – should melt away as a consequence of reproductive decisions made years ago.

The youth bulge – the ratio of young men to older men – a conflict driver

Youth bulges have been one of the key drivers of instability and social unrest. Of the 251 conflicts the world has seen between 1950 and 2006, the average youth bulge of the countries involved was 106% and two-thirds of them had youth bulge ratios above 100%. (Youth bulge of developed countries is 45-55% in present times.)

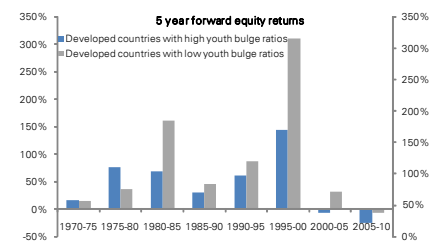
Youth bulges in emerging markets likely to decline sharply from 2010–2020

Emerging-market youth bulges are projected to decline in the next decade (except in sub-Saharan Africa, where the data are distorted by AIDS-related deaths of older males). This should lead to declines in emerging-market conflict which should in turn engender greater political stability, and equity markets like that combination. Middle age, middle income levels and a middle class tend to be a productive combination for equities. We would expect tourism names to benefit, as should brokers/investment banks/fund manager stocks that intermediate healthier emerging equity markets.

Risks to our thesis

Projected declines in youth bulges may lower the probability of conflict but do not eliminate it. In addition, the past performance of this thesis is no guarantee it will work in the future. When governments, societies and markets interact, the complexity levels are extreme, and we need to be cognizant of the uncertainty surrounding our projections.

Lower Youth Bulge = Higher Equity Markets



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Youth bulges and equities

Demographics and equity markets

Often equity investors can get too absorbed in the noisy, daily feed of data, running complicated models learned in business schools, and hence sometimes miss the powerful impact of underlying social and political changes on equities.

Recent events in the Middle East have captured the attention of investors worldwide. We believe that several factors have unleashed suppressed frustration with the status quo. These factors include poor economic growth, high income inequality, a history of prior conflict and a high youth population. We look at several pieces of research which suggest that a high youth population ('youth bulge') is in fact a prime ingredient behind conflict and aggression and which also suggests that the youth bulge is set to decline as a consequence of low birth rates a decade ago. This has the potential to be a major long-term positive for equity markets, in our view. A diminishing youth bulge should lower conflict probabilities, bringing greater political stability, which should be positive for equity markets.

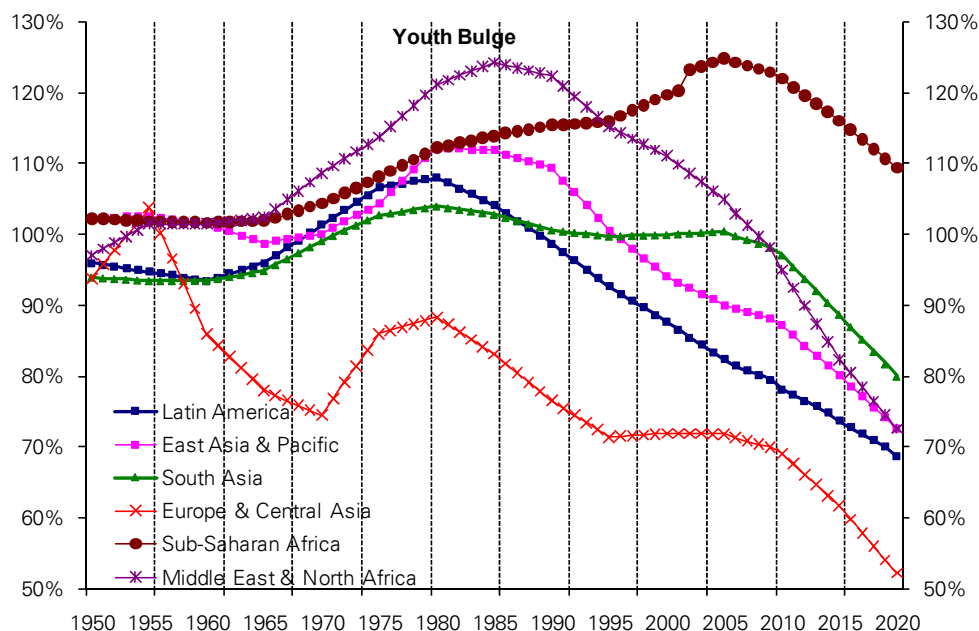
In the following pages we explore:

1. The data pointing to a sharp decline in the youth bulge over the next decade.
2. The predictive power of the youth bulge in projecting equity performance.
3. Research concluding that a falling youth bulge reduces conflict and increases political stability.
4. Why lower levels of conflict are positive for equity markets.

Youth bulge set to decline

The youth bulge is defined as the ratio of males between the ages of 15 and 29, versus those between 30 and 59. Youth bulges across the emerging world are projected to fall in the coming decade, a consequence of reproductive decisions made years ago. We show projected youth bulges by region in Figure 1 and for most countries in the world in Appendix A.

Developed countries today have youth bulge ratios of around 45-55%. Egypt is at approximately 90% today, projected to decline to 70% in ten years. Iran is at 100% today, but its youth bulge is projected to decline to 55% in ten years, according to the UN population database. The US youth bulge ratio is at 55% today. At the start of the Iran-Iraq war in 1978, Iran's youth bulge was at 112%, Iraq at 123% (projected to be a still-high 96% in 2020). Emerging-market youth bulges should decline sharply in the next decade (except in sub-Saharan Africa, where the data are distorted by AIDS deaths for older males).

Figure 1: Youth bulges likely to drop significantly in the next decade in all regions

Source: Deutsche Bank, Population Division, UN Secretariat, World Population Prospects: The 2006 Revision, US Census Bureau, (<http://esa.un.org/unpp>). Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years, Youth bulge shown is the average youth bulge of the region, computed using equal weights for all the countries within that region.

The youth bulge has predictive power in projecting equity performance

As Figure 2 shows, the youth bulge has predictive power when it comes to projecting equity market returns. We broke down youth bulges in developed countries into two groups – the five countries with the highest youth bulge ratio and the five with the lowest. We then looked at equity market performance for these two groups in the ensuing five-year period. Countries with the lowest youth bulge levels outperform the countries with the highest levels in six out of eight discrete periods between 1970 and 2010. Of course, other equity market movers also played their part, but we wanted to isolate just the impact of the youth bulge. Based on this simple chart, in developed countries, everything else being equal, the equity market prospects for the US, UK, New Zealand, Australia and Ireland are less attractive than for Italy, Spain, Greece, Japan and Germany.

A declining youth bulge should lead to lower conflict and greater political stability

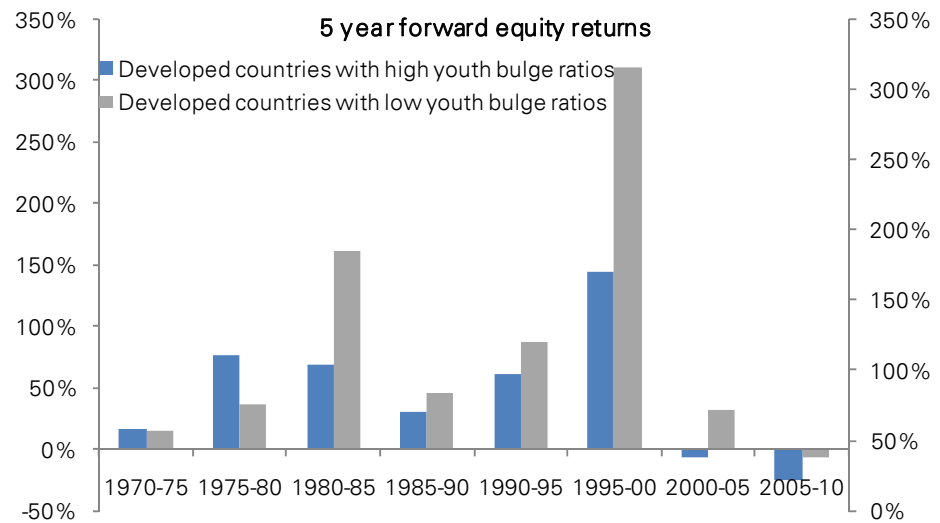
There is a significant body of research that isolates the key drivers of conflict and war – youth bulges, weak political regimes, poor economic growth, income inequality, a history of prior conflicts and population size. The history of war is the history of young men in conflict. Over history, a number of revolutions and wars have been associated with rising youth bulges, among other factors – the civil war in Medieval Portugal (1384),¹ the Spanish *Conquistadors* in Latin America were mainly second and third sons, a youth bulge spillover², and the French Revolution of 1789³. Student uprisings in the late 1960s have also been linked with the youth bulge⁴.

¹ James L. Boone, "Noble Family Structure and Expansionist Warfare in the Late Middle Ages", Rada Dyson-Hudson and Michael A. Little, eds. "Rethinking Human Adaptation: Biological and Cultural Models", Westview, 1983, pp 79-96.

² Gunnar Heinsohn, "Population, Conquest and Terror in the 21st Century", 2005, University of Bremen

³ Herbert Moller, "Youth as a Force in the Modern World", Comparative Studies in Society and History 10, pp 238-260, 1968, cited in Henrik Urdal, "Population Pressure and Domestic Conflict: Assessing the role of "youth bulges" in Conflict Outbreak, 1950-2000, PRIO, Oslo, 2001.

⁴ Lewis Feuer, "The Conflict of Generations. The Character and Significance of Student Movements", London, 1969, Heineman. Cited in Henrik Urdal, op. cit.

Figure 2: Lower male youth bulges = higher equity markets

Source: Deutsche Bank, Bloomberg Finance LP. High = 5 countries with highest youth bulge ratios and low = 5 countries with lowest youth bulge ratios. 21 developed countries as defined by MSCI are included. At the end of 2010 the US, New Zealand, Ireland, Australia and UK have the highest youth bulge ratios while Italy, Spain, Greece, Japan and Germany have the lowest youth bulge ratios among developed nations.

Figures 3 through 6 show the correlation of the youth bulge in Latin America, East Asia/Pacific, the Middle East/North Africa and sub-Saharan Africa with the number of conflicts. There seems to be a close correlation. Figure 7 shows the relationship between the youth bulge and the severity of conflicts (defined by the number of deaths per million of population in a year's conflict). Again, a tight relationship seems to be indicated. Indeed, of the 251 conflicts the world has seen between 1950 and 2006, the average youth bulge of the countries involved was 106% and two-thirds of them had youth bulge ratios above 100%.

Foreign Policy Magazine and the Fund for Peace rank countries on their degree of stability, using 11 metrics – social, political and economic. But Figure 8 shows that just one factor – the youth bulge – explains about 50% of the changes in the degree of stability across nations. On the bottom-right are the countries suffering from heaving youth bulges. None of them are considered stable. However, there are a few countries with low youth bulges that are also unstable (N. Korea, etc).

We can think of three reasons why a relative surfeit of young males is associated with higher levels of conflict, war, rebellions, revolutions and lower levels of political stability. *First*, employment opportunities and wages for so many young males are simply insufficient in the absence of strong economic growth. The opportunity costs of becoming a rebel are low. If the state is weak and financing is available, the raw material for conflict is ready. *Second*, credible grievances should present themselves – these could be related but not restricted to religious, economic, ethnic, social, anti-immigrant or neighboring country issues – and young males comprise the social group most prone to organized militancy. *Third*, behavioral psychology suggests that a key motivator for striving by young males is to acquire resources to obtain and retain mates. *"The dangerous, confrontational, competitive behaviors of young males – especially the unmarried and unemployed – should be expected where low-risk alternative behaviors are likely to produce no reproductive payoff."*⁵

⁵ Christian G. Mesquida and Neil I. Werner, "Male Age Composition and Severity of Conflicts, Politics and Life Sciences", September 1999, pg 182, citing M. Daly and M. Wilson, "Evolutionary Psychology of Male Violence", J. Archer, Male Violence, London, Routledge, 1994.

Figure 3: Youth bulges and the number of conflicts – closely correlated

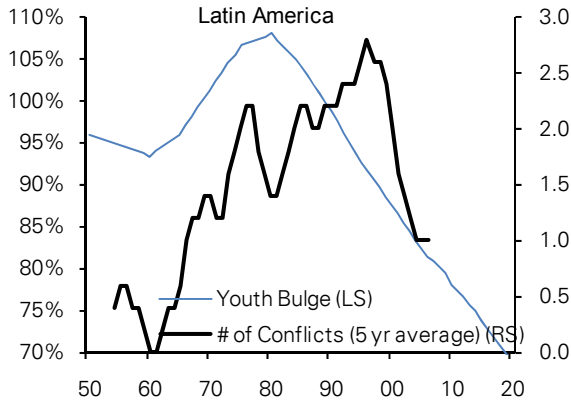


Figure 4: Youth bulges and the number of conflicts – closely correlated

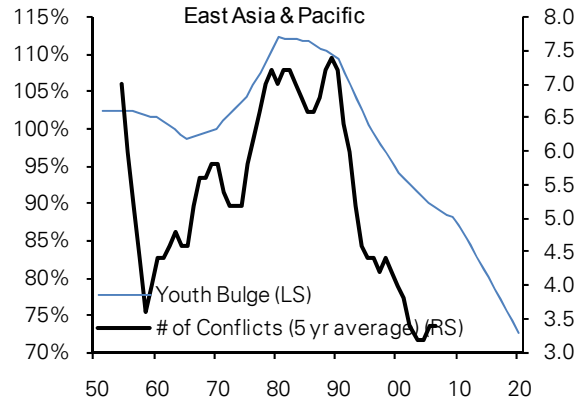


Figure 5: Youth bulges and the number of conflicts – closely correlated

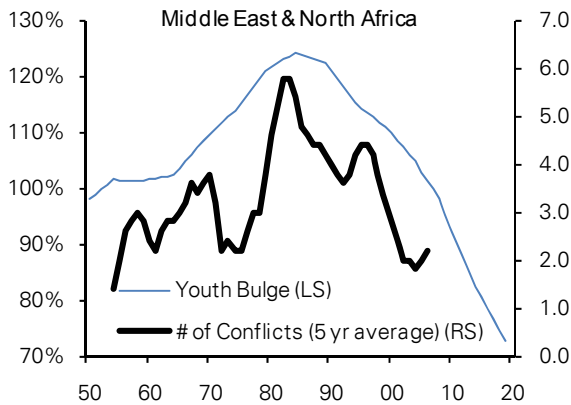
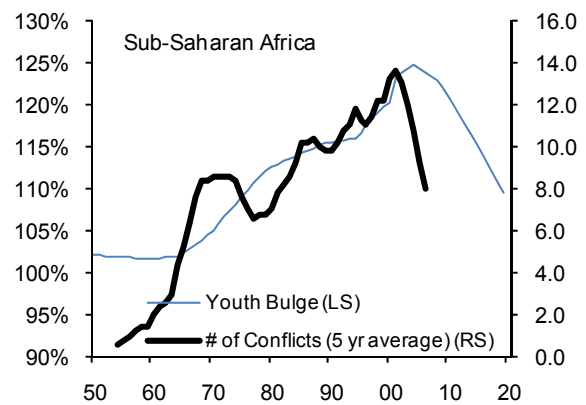
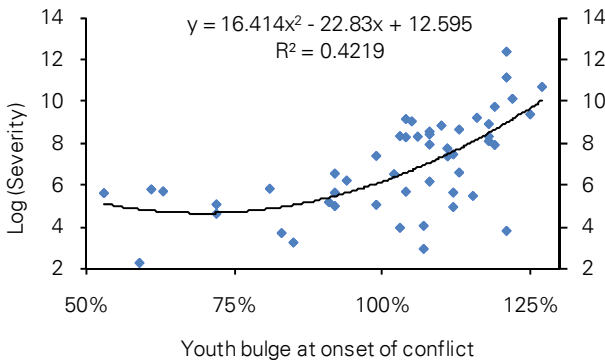


Figure 6: Youth bulges and the number of conflicts – closely correlated



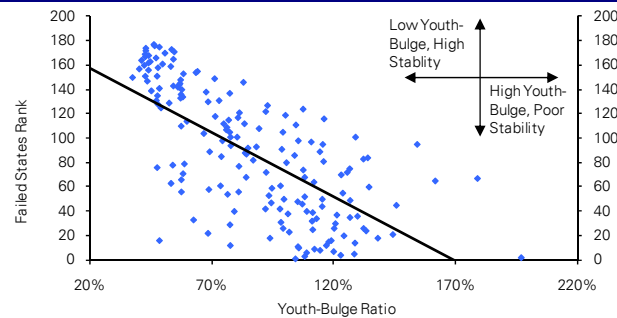
Source: Deutsche Bank, Population Division, UN Secretariat, World Population Prospects: The 2006 Revision, US Census Bureau (<http://esa.un.org/unpp/>); Centre for the Study of Civil War, PRIO (<http://www.prio.no/CSCW/Datasets/Armed-Conflict/>), Youth Bulge = Male population from 15 to 29 years/ Male population between 30 to 59 years, youth bulge shown is the average youth bulge of the region, computed using equal weights for all the countries within that region.

Figure 7: Conflict intensity (number of deaths) grows exponentially with the youth bulge



Source: Deutsche Bank, Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp/>); Others. Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years, Severity is defined as the average number of conflict related deaths each year per million of population.

Figure 8: Half the explanatory power of a country's stability comes from one factor – the youth bulge



Source: Deutsche Bank, Fund for Peace (http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=292&Itemid=452), Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau (<http://esa.un.org/unpp/>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Cessation of conflict is a driver of equity bull markets

As Figure 9 shows, in the last century, secular equity bull markets have coincided with periods when major wars and conflicts abated. The bull market of 1920-1929 in the US came soon after the end of World War I. The protracted bull market from 1950-1966 emerged from the debris of WWII and its appendage, the Korean War. The 1982-2000 bull market was initially propelled by compelling valuations, falling inflation and a rising Demi-Ashton ratio (the ratio of those in their 40s to 20s), but gained escape velocity after 1989, at the end of the Cold War. These are not coincidences, in our view.

Figure 9: Bull markets came after great wars ended, driven by falling inflation and higher productivity



Source: Deutsche Bank, Bloomberg Finance LP, Robert Shiller (<http://www.econ.yale.edu/~shiller/>)

We can think of two key reasons why the cessation of conflict is a driver of equity bull markets:

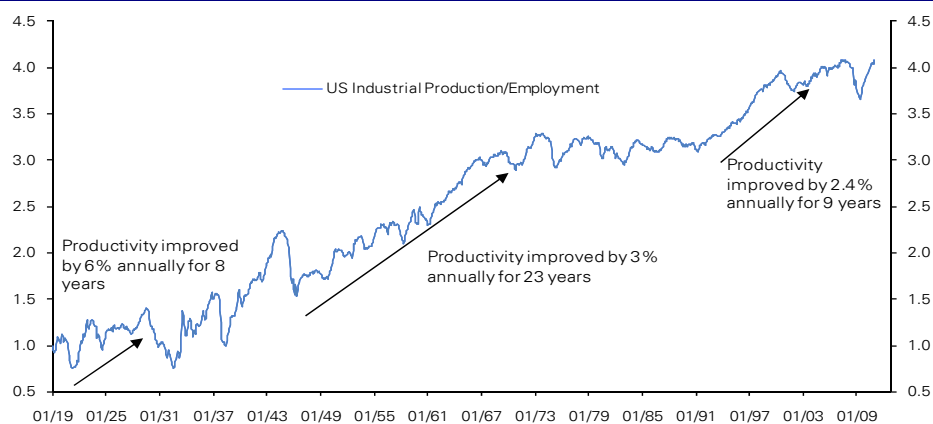
- A reduction in *uncertainty* follows the end of war and conflict. The beneficiaries are clear, the disadvantaged need reconstruction. Already low valuations have ample room to move up. The displacement of peoples comes to an end, the evisceration of the capital stock demands replacement, normal trade relations resume, military resources return to civilian life and war-driven fortunes are ploughed back into civilian production. But we believe the key reason is declining uncertainty for entrepreneurs to commit funds for expansion, and a hope that policymaking shifts towards free-market principles.
- Second, wars – and, even in times of peace, defense spending – motivate and mobilize substantial capital formation that leads to innovations. These innovations percolate into the civilian economy once conflict ends. The economies of scale that these spillovers reach often spark bubbles and productivity waves. Innovations require large concentrations of brainpower and capital. There are several ways to mobilize the critical mass of financial and cerebral capital to engender innovation – in a free market economy, bubbles help. The prospect of vast riches attracts investment capital at high multiples – most lose money, but the bubble-financed railroads, canals, automobile plants, electronics firms, and fiber optic networks get built. The few beneficiaries make fortunes. Most bubble participants don't make it – the forces of creative destruction and survival of the fittest make sure of that.

The imperatives of war – the survival of nations and ways of life – make it easier to resort to patriotism to capture capital and drive innovation. This is probably controversial, but we believe there is enough solid research to back it.⁶ Wars and protracted conflict

⁶ See "Is War Necessary for Economic Growth? Military Procurement and Technology Development", Vernon W. Ruttan, 2006, Oxford University Press.

engender new ways to communicate, transport, observe, fortify and destroy. The mass manufacturing process, aviation, computers, radar, sonar, the internet (Arpanet was the predecessor), GPS, nuclear power, are some of the inventions that emerged as a result of war and geopolitical competition. Michael Dertouzos, a technology visionary, contends that between a third and half of major innovations in science and technology could be attributed to the US Defense Advanced Research Agency (DARPA), created in 1958.⁷ Is it any wonder then that the three productivity waves in the US came in the aftermath of peace breaking out? (See Figure 10.) And is it any wonder that the considerable equity bull markets we highlighted in Figure 9 were coeval with these productivity waves?

Figure 10: Productivity booms follow wars



Source: Deutsche Bank, Bureau of Labor Statistics, Federal Reserve Board, Employment data is annual before 1939, after that is monthly.

Conclusion

Emerging-market youth bulges should decline sharply in the next decade, which suggests a lower probability of emerging-market conflict which in turn should be positive for equity performance.

We would expect tourism names to benefit, as should brokers/investment banks/fund manager stocks that intermediate healthier emerging equity markets. Middle age, middle income levels and the middle class tend to be a productive potential combination for equities. We expect the reduced number of young men, combined with greater prosperity, to lead to greater defense spending on armaments rather than manpower. Defense contractors should do well as a theme, in our view.

Risks to our view

We want to highlight that the projected declines in the youth bulges, different as they are across different geographies, only lower the probability of conflict and do not ensure such a positive outcome. Clearly, the other drivers of conflict – economic growth, income inequality, sheer population size, etc. – will continue to matter, and not always favorably. Moreover, the highlighted connection between lower youth bulges, declining conflict and stronger equity markets, while likely to still hold in the future, is by no means assured.

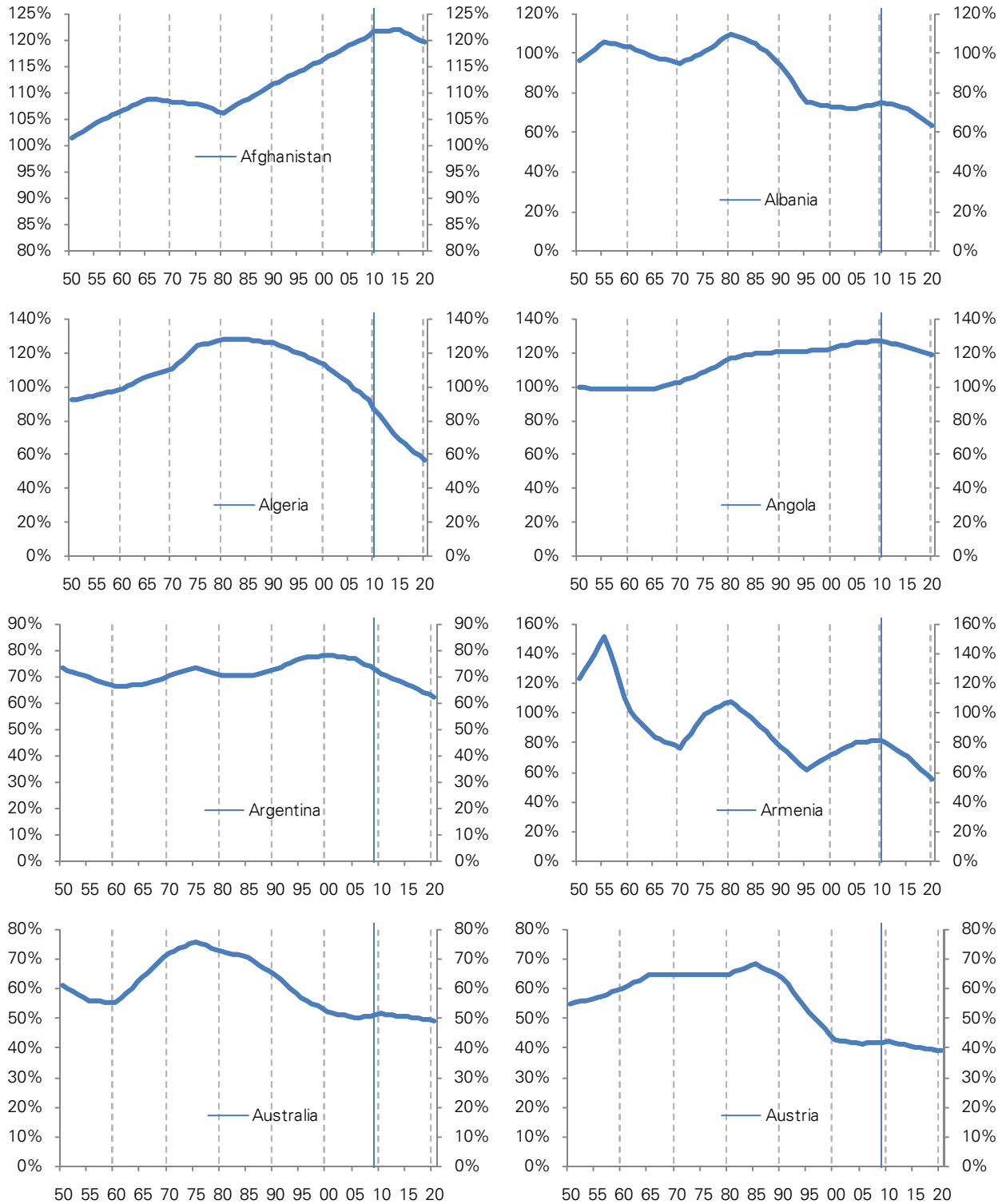
These connections and hypothesized chain of relationships could break down in individual countries or regions – these are complex socio-political relationships, and cannot be expected

⁷ "DARPA's contribution to the new world of information was spectacular. We can credit its investment with somewhere between a third and a half of the major innovations in computer science and technology. These include time sharing, computer networks, landmark programming languages like Lisp, operating systems like Multics (which led to UNIX), virtual memory, computer security systems, distributed computer systems, computers that understand human speech, vision systems, and artificial intelligence, an endeavor responsible for understanding and emulating human intelligence by machine". See page 36 in "What Will Be – How the new world of information will change our lives" from Michael Dertouzos, Harper Collins, 1998

to capture specific contours and connections for every case. Past performance of this thesis clearly has no guarantee of assuring it will work in the future – when governments, societies, and markets interact, the complexity levels are exceptionally high, and we need to be cognizant of the uncertainty surrounding our projections.

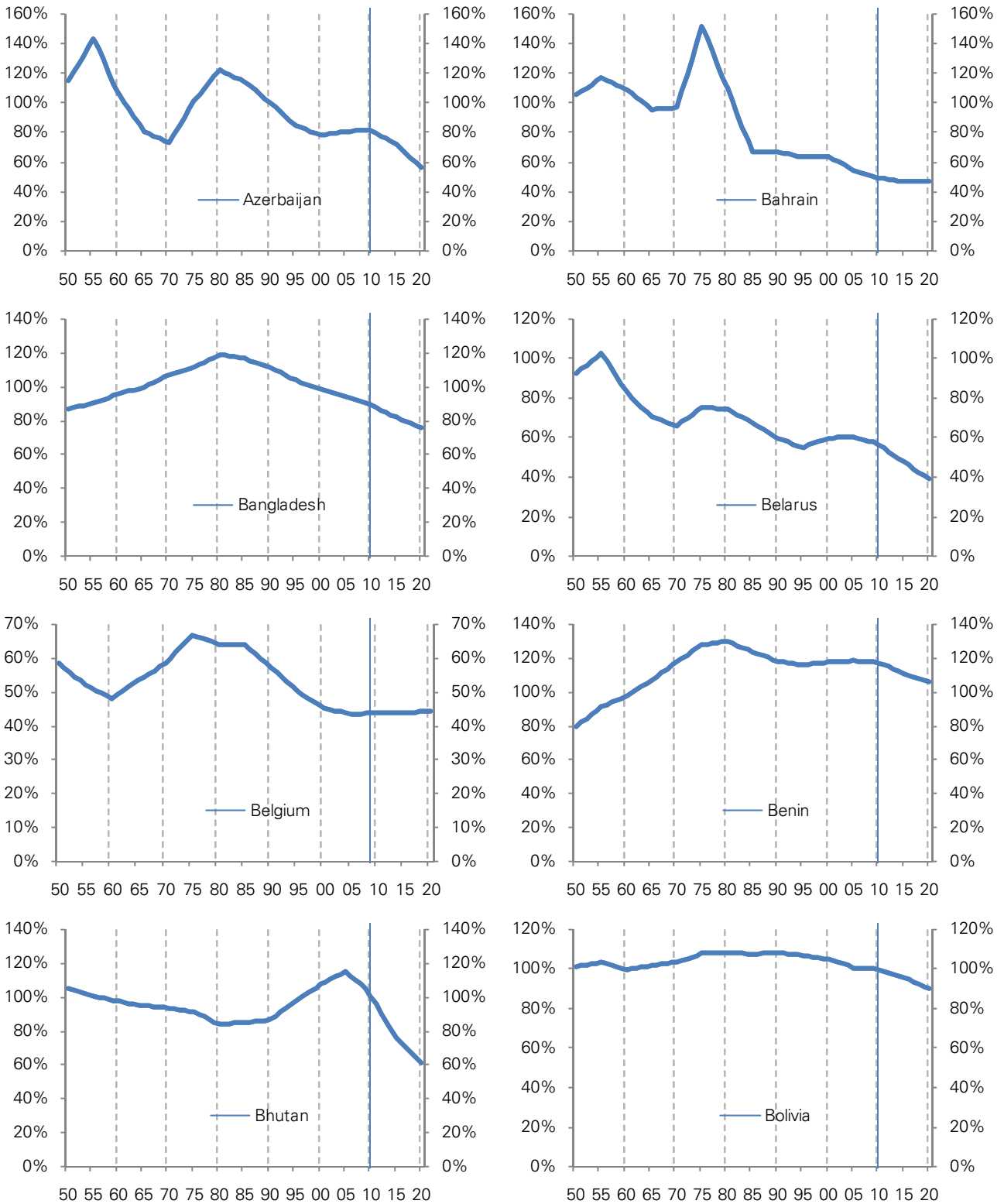
Appendix A

Figure 11: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 12: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 13: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 14: Youth bulge



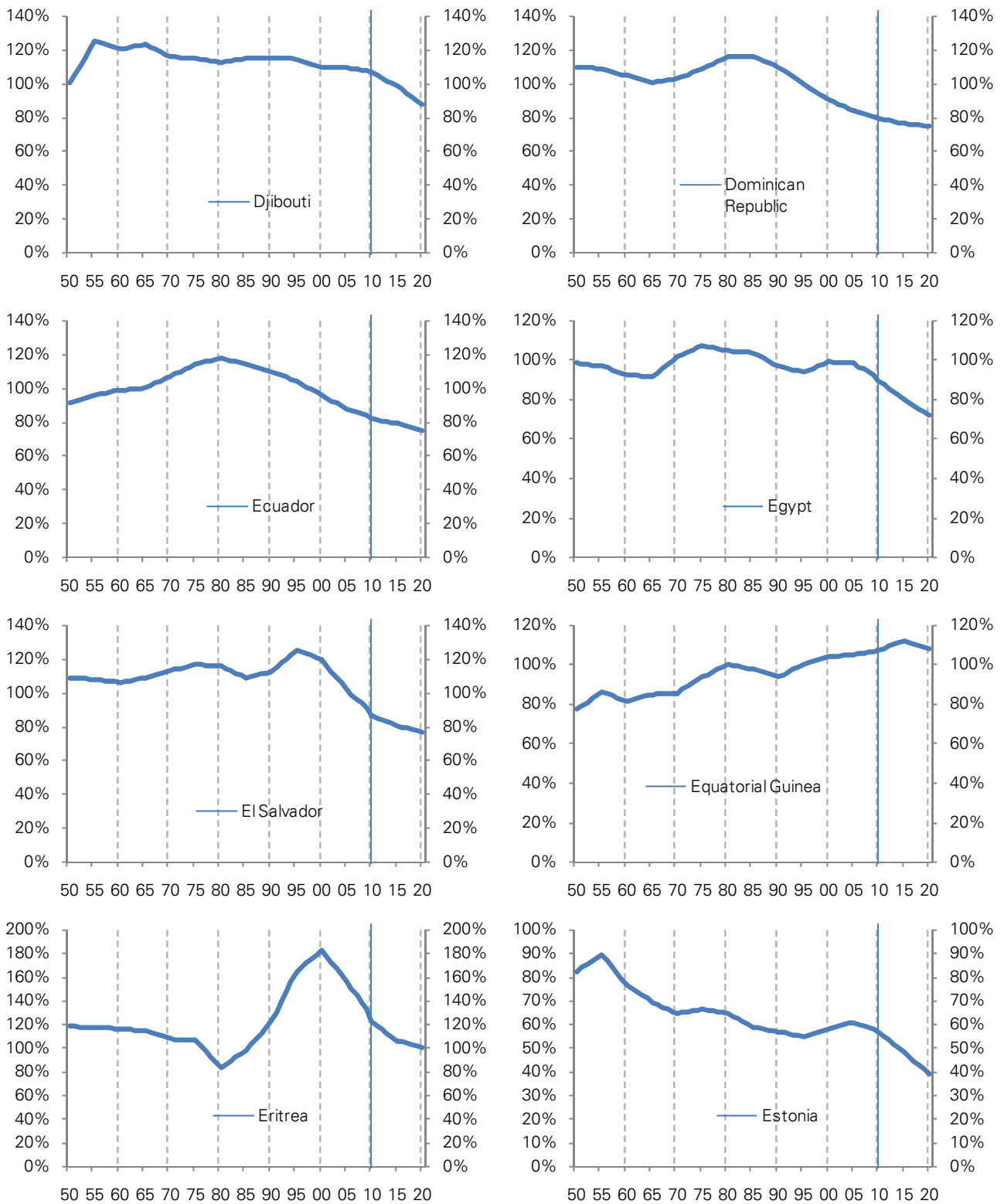
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 15: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 16: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 17: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 18: Youth bulge



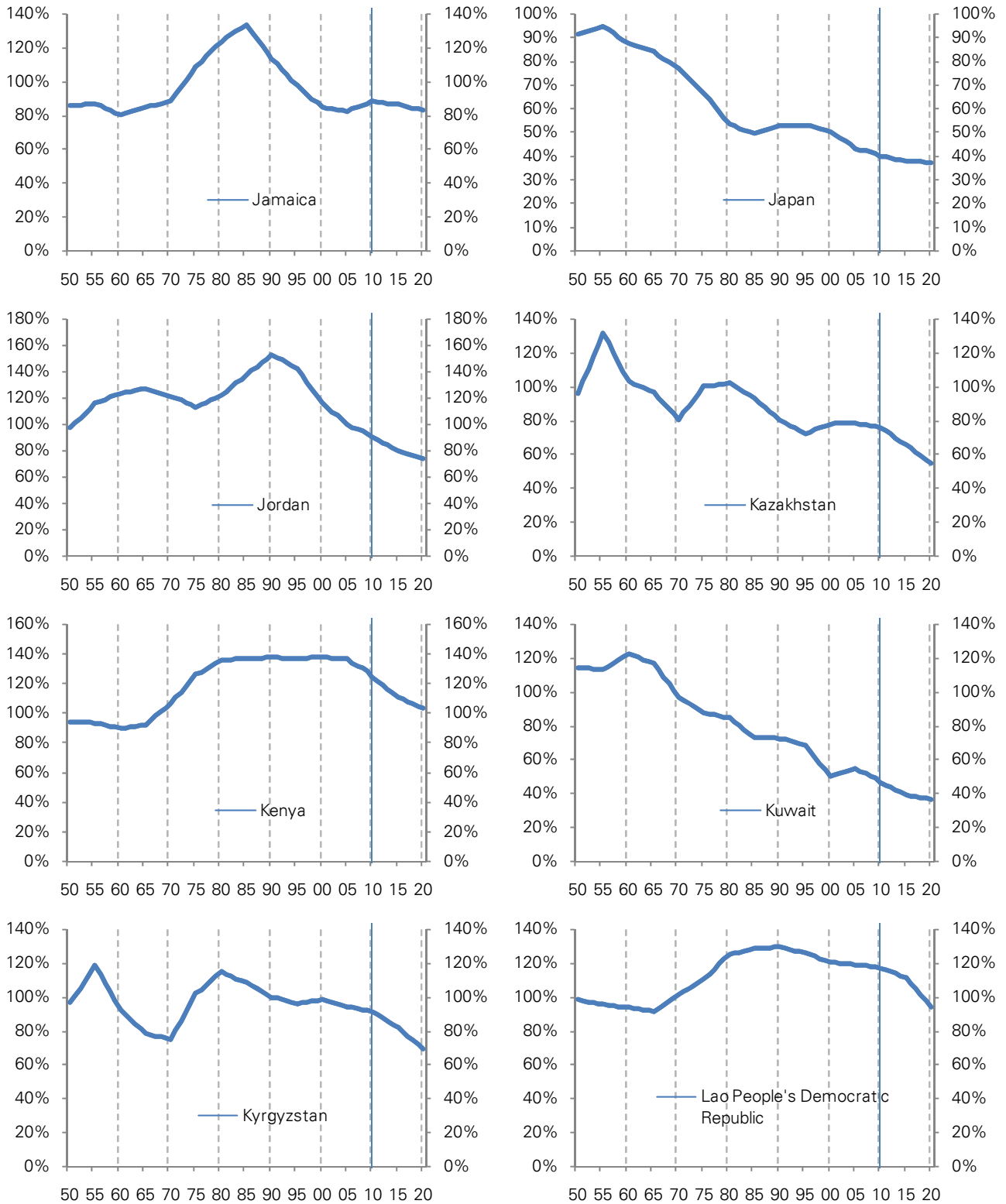
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 19: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/Male population in the range 30 to 59 years

Figure 20: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/Male population in the range 30 to 59 years

Figure 21: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 22: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/ Male population in the range 30 to 59 years

Figure 23: Youth bulge



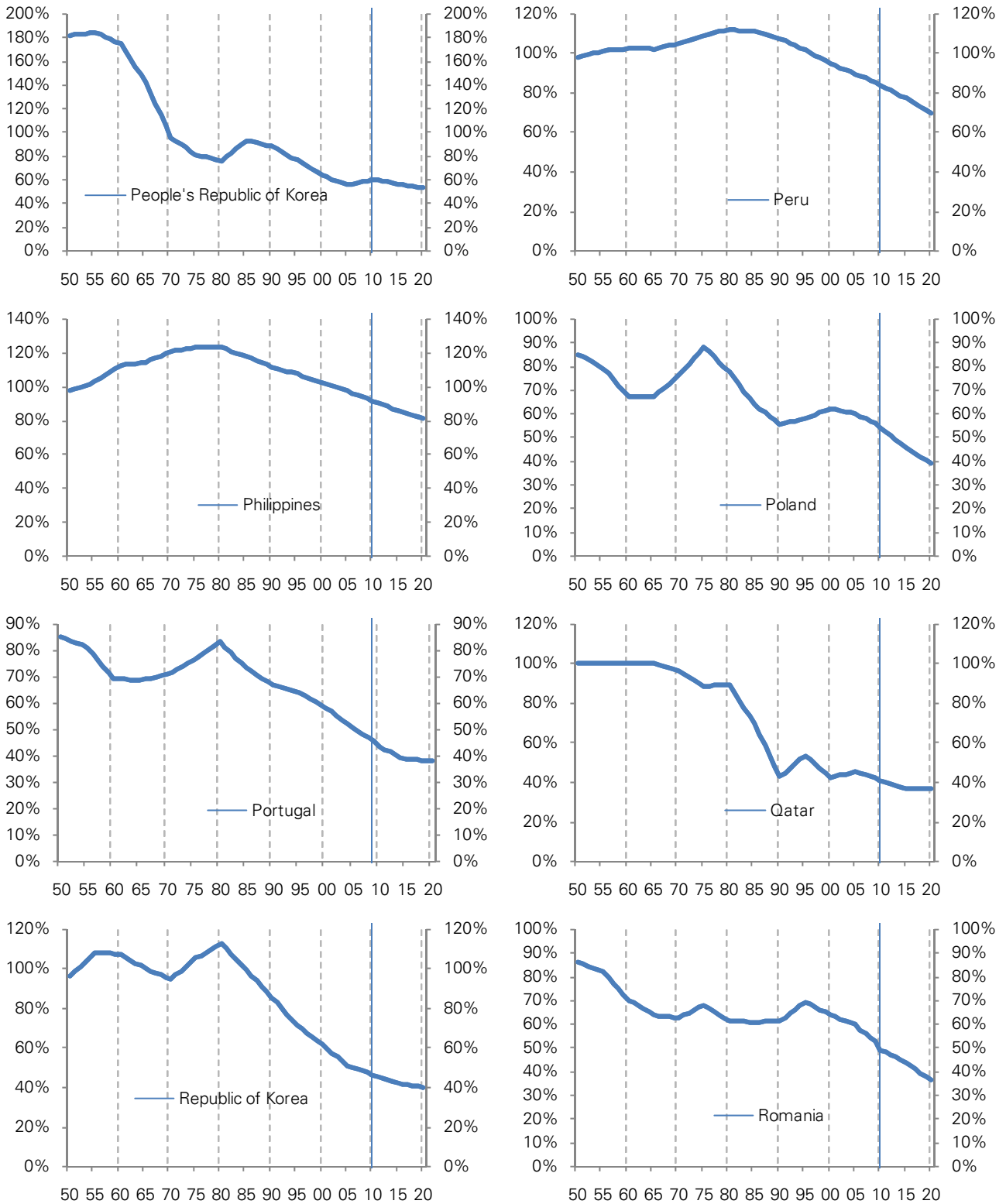
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 24: Youth bulge



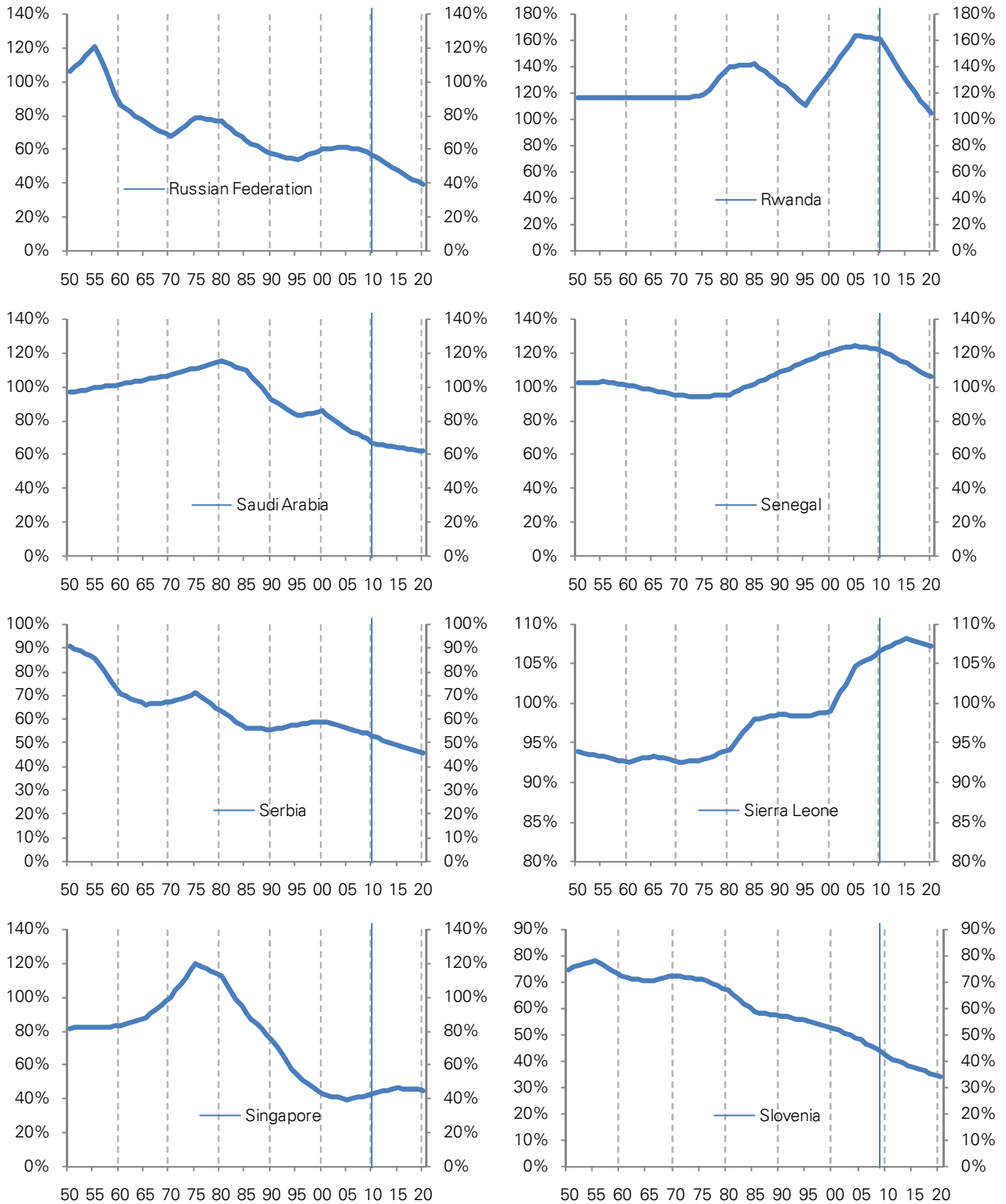
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 25: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 26: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years/Male population in the range 30 to 59 years

Figure 27: Youth bulge



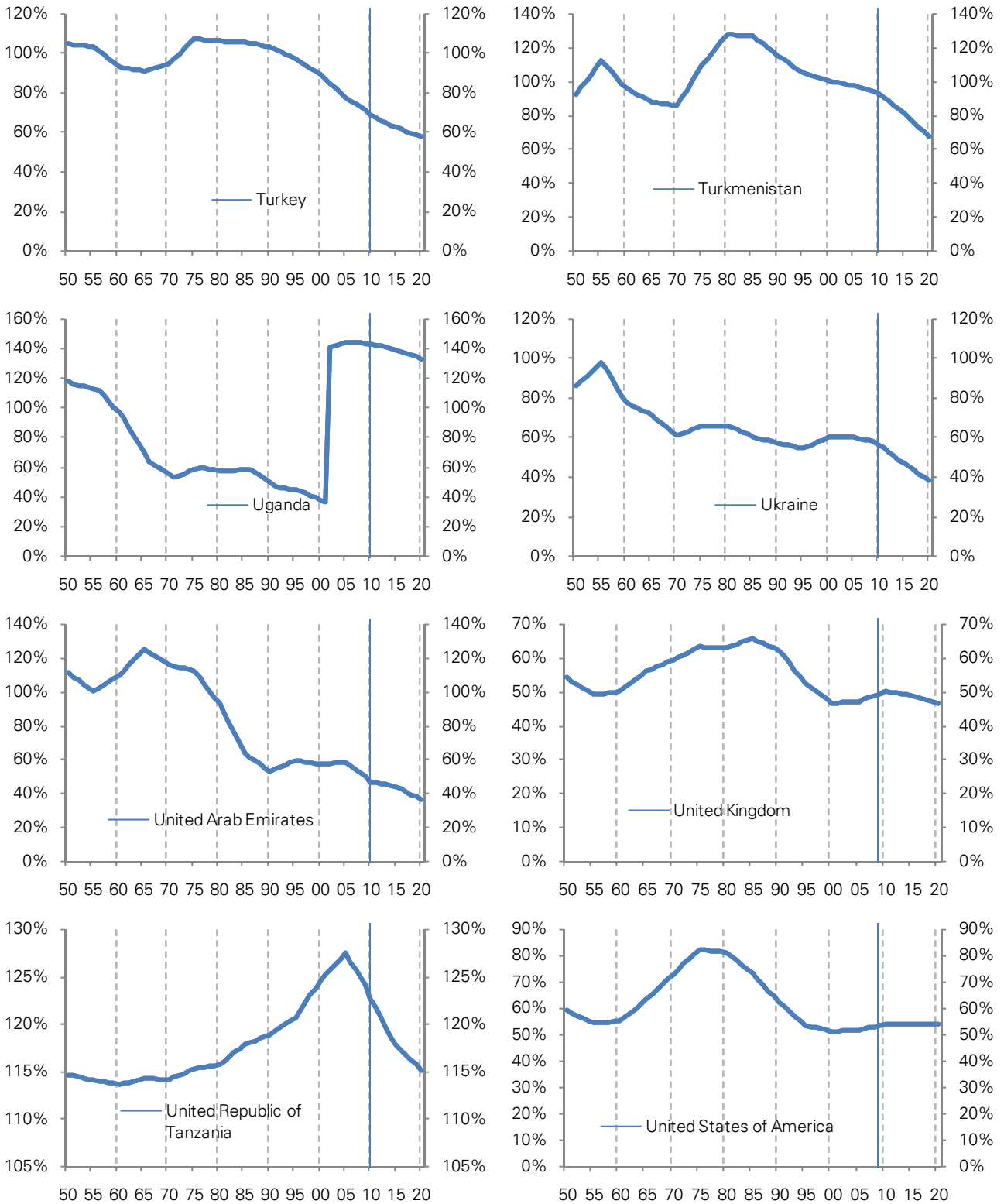
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 28: Youth bulge



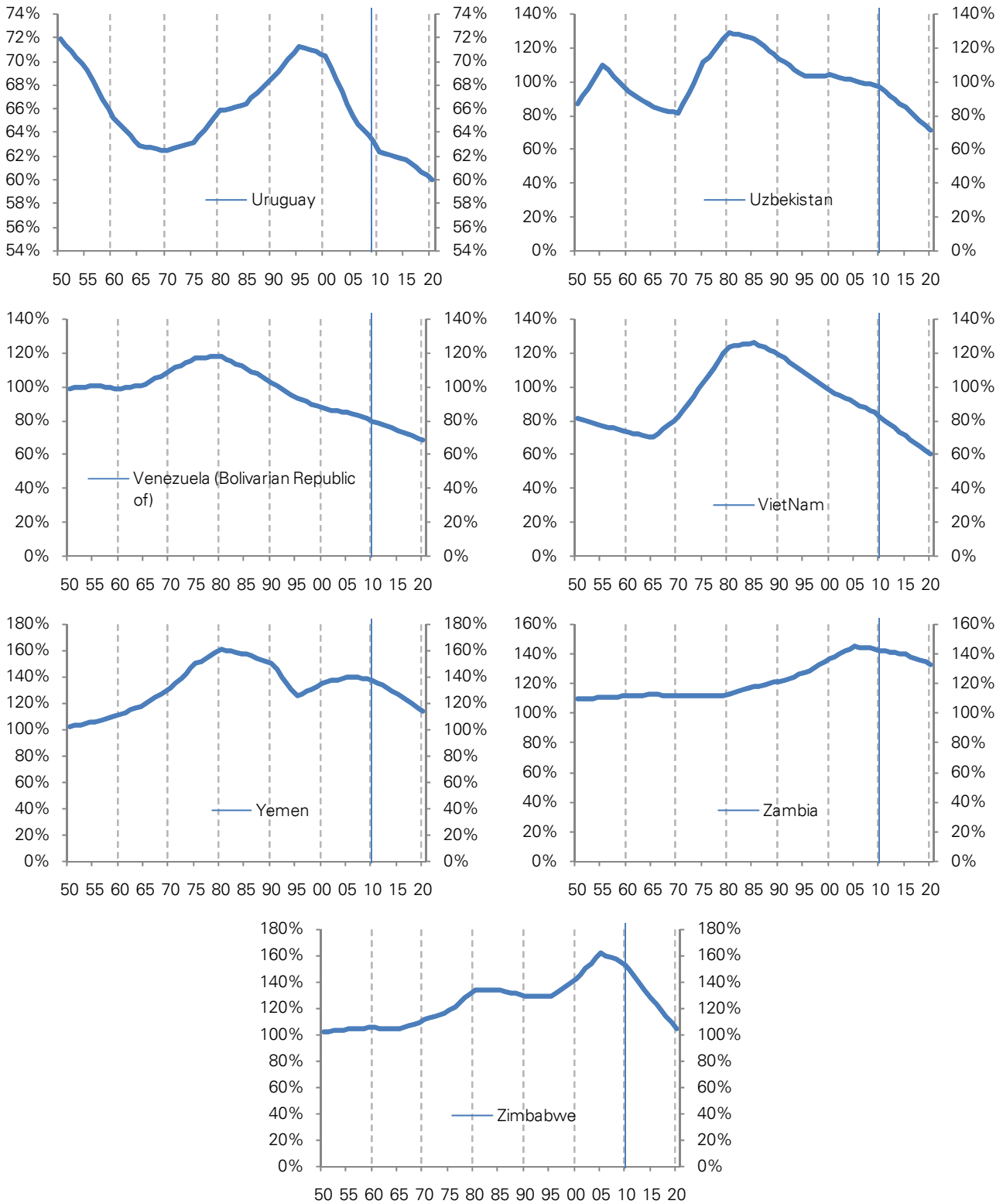
Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 29: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Figure 30: Youth bulge



Source: Population Division, UN Secretariat, World Population Prospects: The 2008 Revision, US Census Bureau, (<http://esa.un.org/unpp>), Youth Bulge = Male population in the range 15 to 29 years / Male population in the range 30 to 59 years

Appendix 1

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Equity rating key

Equity rating dispersion and banking relationships

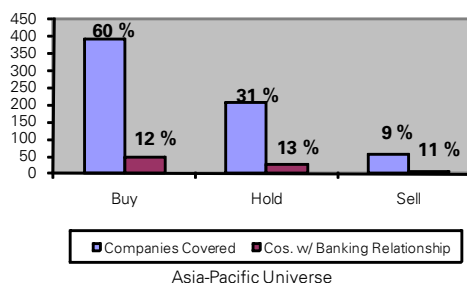
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Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

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 - Hold: Expected total return (including dividends) between -10% and 10% over a 12-month period
 - Sell: Expected total return (including dividends) of -10% or worse over a 12-month period



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