A Template for Understanding

BIG DEBT CRISES

Part 3:
Compendium of 48 Case Studies

Table of Contents

Note that blank charts indicated data that we could not readily find; the cases of post-WWII Germany, Italy, and Japan were excluded because of data inadequacies.

Glossary of Key Economic Terms

Below we explain some of the economic concepts used in Part 3 (and other parts of the books as well). These explanations are simplified for brevity.

balance of payments: The balance of all of the transactions (i.e., purchases of goods, services, financial assets, and other payments) between people/organizations in a particular country/currency and the rest of the world. Think of the transaction balance for a particular type of good—e.g., when someone in a country buys oil, they give up some form of capital to get the oil. When the balance of payments worsens, it's like when a family's financial condition worsens because inflows (the revenue and lending it gets) goes down relative to its expenditures, and when the balance of payments improves, the reverse is true.

balance-of-payments crisis: A type of economic crisis in which there is a worsening of the balance of payments so that a country's entities lack adequate buying power in world markets to meet its needs. The country has essentially run out of cash and credit.

bubble: A stage of the debt cycle that typically sees self-reinforcing and unsustainable rises in debt, asset prices, and growth. The key word here is "unsustainable," so that the temporary boom conditions will be followed by a bust. Imagine borrowing a lot of money to live an expensive life style; it can continue for the near term but is unsustainable and will result in bad times when the adjustment happens.

capital inflows/outflows: The movement of money and credit across borders to buy capital/investment assets (like bonds, currency, equities, a factory, etc.). Foreigners buying/selling a country's assets are 'inflows' and domestic players buying/selling foreign assets are 'outflows.'

core inflation: Inflation that excludes the prices of especially volatile goods, such as commodities.

currency peg: An exchange rate policy in which a country tries to keep its currency at a fixed value to another currency, a mix of currencies, or an asset such as gold.

current account balance: Exports minus imports plus net income receipts. Think of it as essentially being net income (income minus expenses). If a country has a current account deficit, its expenses are more than its income, so it has to make up the difference with capital transactions (like borrowing or selling equity) that are accounted for in the capital account balance.

debt service: The cost of maintaining debts over a given period, including interest and principal payments.

deleveraging: The process of reducing debt burdens.

deleveraging attribution: Bridgewater analysis of what led to increases or decreases in debt burdens. The black dot represents the annualized change in debt as a percentage of GDP over the period. (A positive percentage means a country's debt levels have increased, and vice versa.) We then show what caused this change: above 0 represents something that increased debt burdens, and below 0 represents something that decreased debt burdens. We show factors that increase or decrease GDP (e.g., inflation and real growth), and factors that increase or decrease debt (e.g., a country borrowing to cover interest payments or other new borrowing). Note that the attribution methodology differs between countries, mostly depending on data availability.

depression: A severe economic downturn at the stage of a debt crisis that typically involves self-reinforcing declines in asset prices and growth. This most classically occurs when central banks are limited in their abilities to ease monetary policy to relieve the economic downturn.

easing: Central bank monetary policy moves that have the effect of making money and credit more available, usually either by lowering interest rates, printing money, changing regulations, or central government fiscal policy moves of changing spending, taxation, or regulations.

fiscal balance: Whether a government is spending more than it earns in tax revenue. A government running a deficit is spending more than it earns (and must either be borrowing or spending down savings), while a government running a surplus is earning more than it spends.

foreign FX returns: The returns an investor experiences by investing in a foreign currency. Incorporates both the change in the exchange rate and the interest that the investor earns above or below what he or she would earn at home.

FX: Foreign exchange rate.

FX debt: Debt denominated in a currency other than that of an investor's home country.

GDP: Gross domestic product; this represents the total value (i.e., price times quantity) of all final goods and services produced in a country. GDP is the most commonly used means of representing the size of an economy. Often, we'll express other economic concepts as a percentage of GDP (e.g., debt), to give a sense of whether those are large or small in the context of a particular economy.

GDP gap: An imprecise measure of whether an economy is operating at a high rate of capacity or a low rate of capacity. It is based on the difference between what an economy is producing today versus the level of production it is estimated to be able to sustain over a longer period of time without negative consequences (known as an economy's "potential"). If an economy has a negative GDP gap, it is producing at a level that has slack (e.g., factories aren't running at full capacity). If an economy has a positive GDP gap, it is producing at a level in which there is very little slack. This is often referred to as an "output gap" or "slack."

liquidity: A measure of whether money and credit are relatively scarce or readily available. When liquidity is low, money and credit are scarce and, in order to borrow, even very creditworthy borrowers have to pay a higher interest rate. When liquidity is high, creditworthy borrowers have no trouble borrowing and pay lower interest rates.

long rate: Interest rates on longer term debt. The nominal long rate we show for this is typically the 10-year government bond yield.

money 0: A measure of the total amount of money that has been printed in a certain currency, usually based on the amount of physical currency in circulation plus reserves held at a central bank. Also referred to as M0.

nominal growth: The change in the value (i.e., price times quantity) of what a country produces (e.g., its GDP). "Nominal" refers to the fact that this includes cases where prices rise from inflation, as opposed to real growth (see below).

potential: An imprecise measure of the level of production an economy is estimated to be able to sustain when operating near capacity. GDP gap represents whether an economy's current level of production is higher or lower than potential.

real: Economic terms that include the word "real" are adjusted to remove the impact of inflation. See the next few items in the glossary for some examples. Importantly, there is often no precision to these measures (e.g., a country's precise real FX is unknowable).

real FX: An imprecise measure of whether the currency is cheap or expensive based on looking at the relative currency levels and relative price levels of countries today relative to what they were in the past. A positive real FX represents a currency that is more expensive and a negative one means it's cheaper using this measure. Usually measured versus a country's trade partners (i.e. a trade-weighted index or TWI).

real GDP: An imprecise measure of the quantity of goods and services produced in a country (as opposed to the total value of goods and services produced, which is influenced by inflation).

real growth: An imprecise measure of the change in the quantity of goods and services produced in a country (as opposed to nominal growth, which is influenced by inflation).

real interest rates: Interest rates that have been adjusted to take out the effects of inflation. If the real interest rate is negative, inflation is running higher than the amount of interest being earned, meaning that lenders are losing buying power over time.

reflation: Instances when monetary policy is easy/stimulative and helps produce an economic recovery.

reserves: A country's holding of foreign currency and/or gold savings—essentially the government's savings in foreign currency that can be drawn upon to make purchases and used to affect the supply, demand, and price of its own currency.

short rate: Interest rates on lending for very short periods of time, usually 3 months or less.

stimulation: See "easing."

tightening: Policy moves that reduce the availability of money and credit, which has the effect of slowing economic growth, usually by increasing interest rates, allowing money supplies to shrink, cutting government spending, or changing rules to restrict bank lending.

yield curve: The difference between shorter-term interest rates and longer-term interest rates. If short rates are above longer-term rates, the yield curve is said to be inverted, meaning short-term interest rates are priced to fall. If short rates are below longer-term rates, short-term interest rates are priced to rise.

48 Debt Crises

This section goes through each of the 48 debt crises we examined, so that you can live through them on your own. This case list was generated by us systematically screening for periods of deleveraging across major countries over the last century—focusing on those cases with a real GDP decline of more than 3%—as well as triangulating that list against the work of others like the IMF and prominent academics. This by no means encapsulates all the debt crises that have occurred over the past century, but it provides a good sample of debt crises and deleveragings that highlight the key similarities (as discussed in Part 1) as well as the differences.

Each case includes a simple computer-generated text analysis of what happened along with a bunch of charts showing the basic stats. These "auto-text" comments are observations of the basic stats and they present a very simplified version of our algorithmic analysis. I am providing you with these to show you how, by viewing cases through a simplified lens (based on the even more simplified template explained in Part 1), the important things pop. Note how the perspective you gain by seeing these situations in a simple way contrasts with the perspective you get when viewing the more complete blizzard of details described in Part 2. I hope seeing the cases at this level helps you more easily see the principle-level commonalities and differences explained in the "Archetypal Big Debt Crisis" template.

United States 1926–1936 Case Auto-Summary

As shown in the charts to the right, the United States experienced a classic deflationary deleveraging cycle between 1926 and 1936.

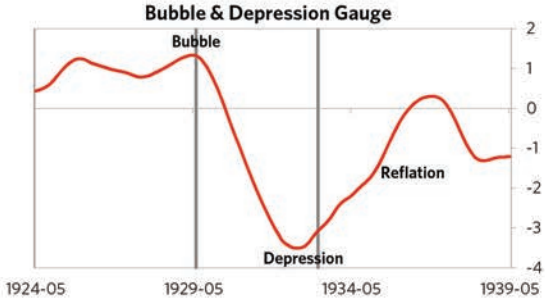
The Bubble Phase

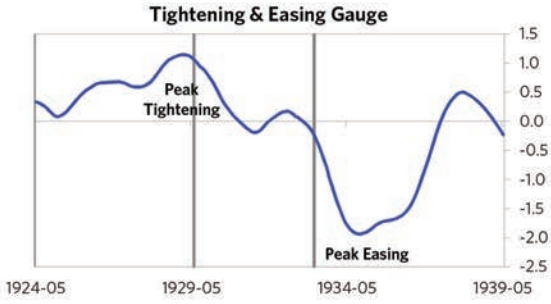
Between 1926 and 1929, the United States experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. By the bubble's end, debts had reached a pre-crisis peak of 125% of GDP. In this case, the debt was in the United States's domestic currency, and the majority was owned domestically, too. Aided by that rising debt, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 13%). Furthermore, strong asset returns (equities averaged 31% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 250 bps). Taken together, these bubble pressures, combined with tightening money and credit, created an unsustainable situation.

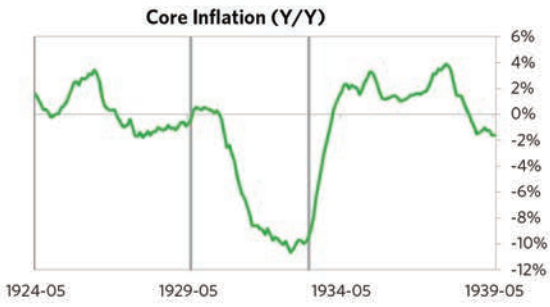
The Depression Phase

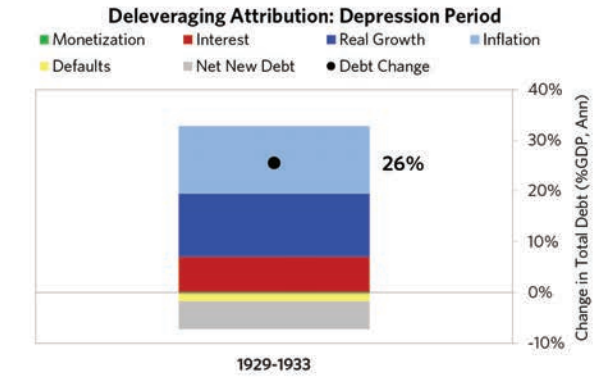
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1929 to 1933. High debt levels left the United States vulnerable to a shock—which came in the form of the 1929 stock market crash. The United States suffered from self-reinforcing declines in GDP (falling by 26%), in stock prices (falling by 84%) and in home prices (falling by 24%). Unemployment rates increased by 23%. The United States's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though the United States needed a deleveraging, its debt as a % GDP went up by 98% (26% annualized), driven by a mix of falling real incomes, deflation, and interest payments financed with new debt.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









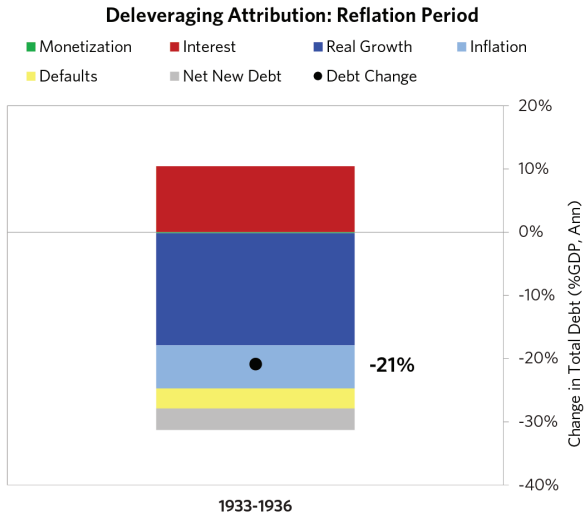
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United States 1926–1936 Case Auto-Summary (cont.)

The Reflation Phase

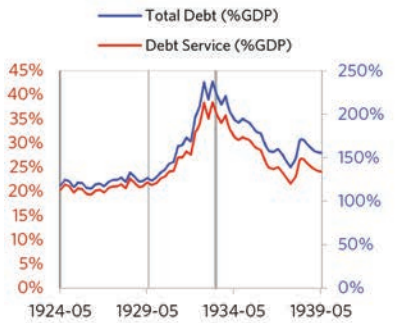
After a slightly longer than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1933. In terms of monetary policy, the government broke the peg to gold, M0 increased by 6% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -5% during the stimulative phase. Over the cycle, the United States was very aggressive in managing its financial institutions and bad debts, pulling 8 out of 9 classic policy levers. In particular, it provided liquidity and directly purchased troubled assets. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 8% during this period and sovereign long rates falling to 3%). During this phase, unemployment rates declined by 14% and debt as a % of GDP fell by 70% (21% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven primarily by rising real incomes and to a lesser extent by inflation. It took 7 years before real GDP reached its prior peak and equity prices in USD terms recovered within 25 years.

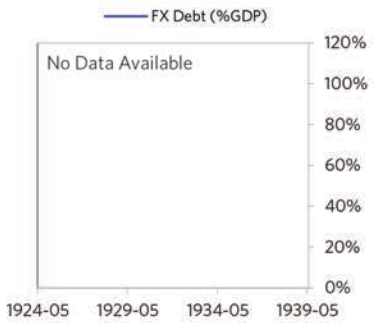
The crisis had a notable impact on the politics of the United States, as it helped set the stage for FDR, whom many people consider a populist leader, to take power.

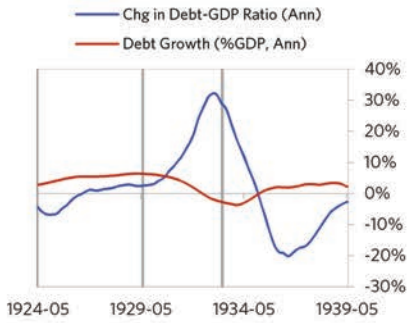


United States 1926–1936 Chart Deck Appendix

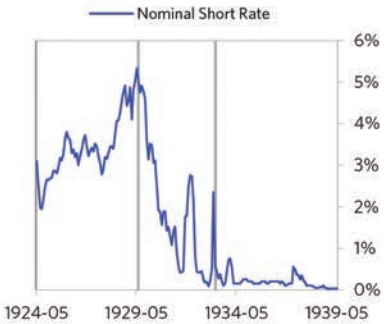
Indebtedness

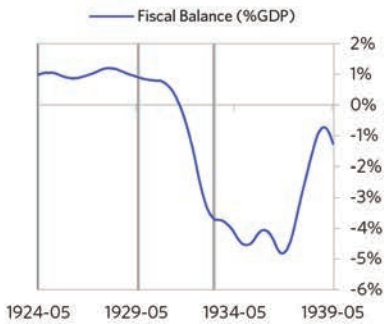




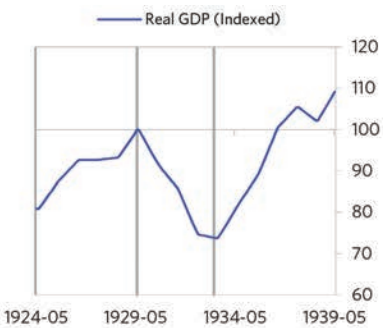


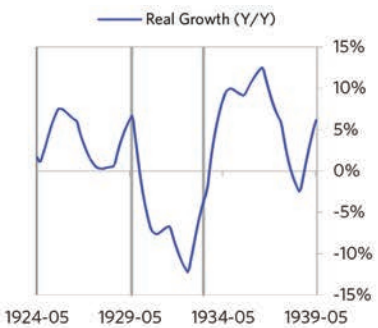
Monetary and Fiscal Policy

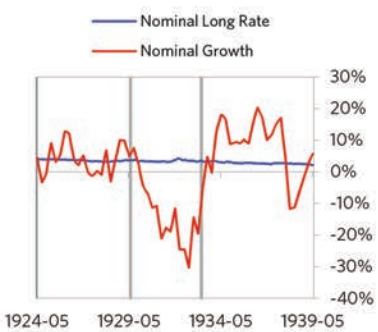




Economic Conditions

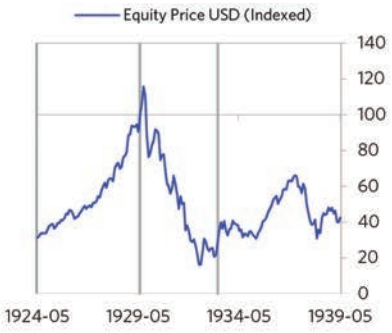


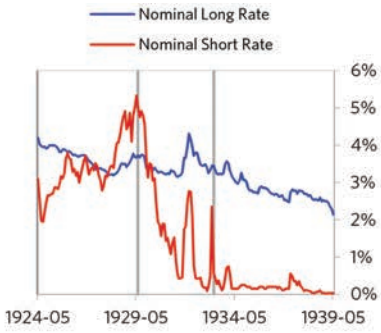


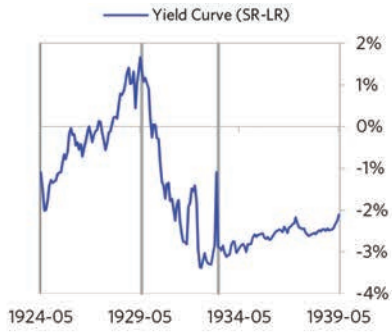


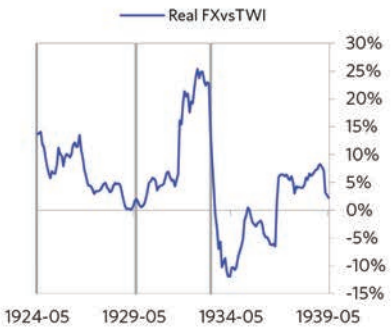
United States 1926–1936 Chart Deck Appendix (cont.)

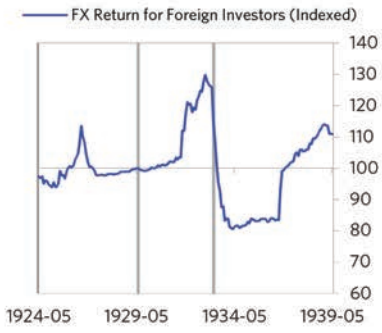
Markets

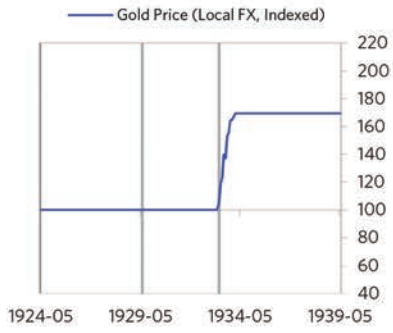




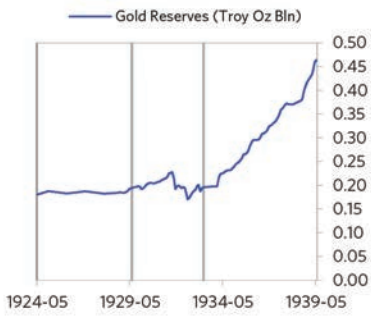


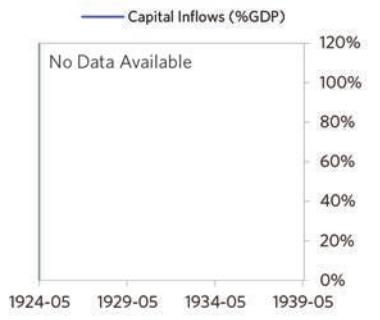


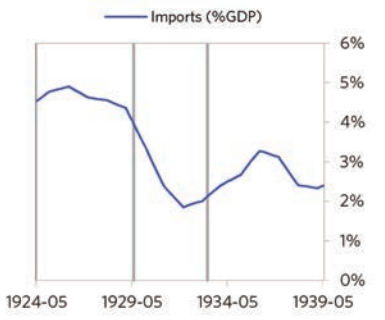


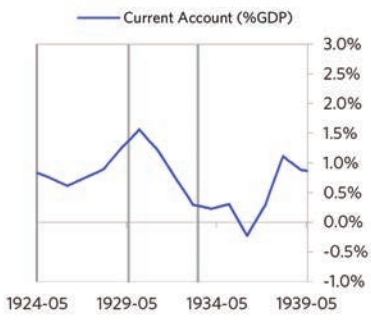


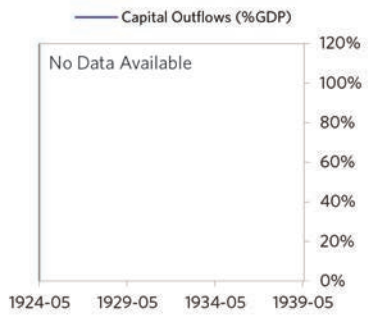
External Position











United Kingdom 1927–1936 Case Auto-Summary

As shown in the charts to the right, the United Kingdom experienced a classic deflationary deleveraging cycle between 1927 and 1936.

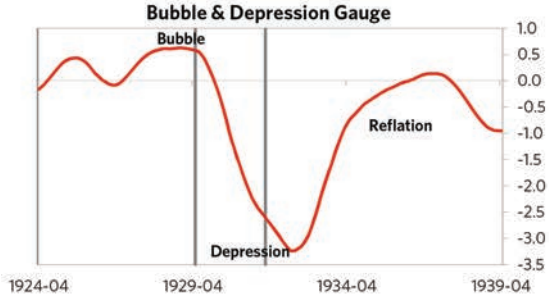
The Bubble Phase

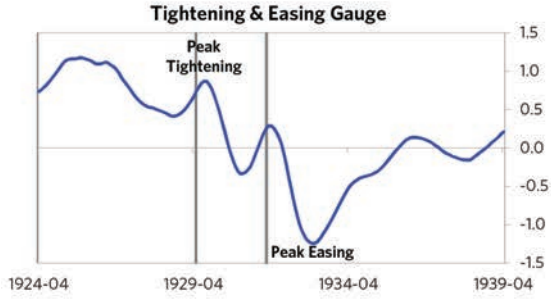
Unlike many other cases, the United Kingdom didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts reaching 210% of GDP prior to the crisis. In this case, the debt was in the United Kingdom's domestic currency, and the majority was owned domestically, too.

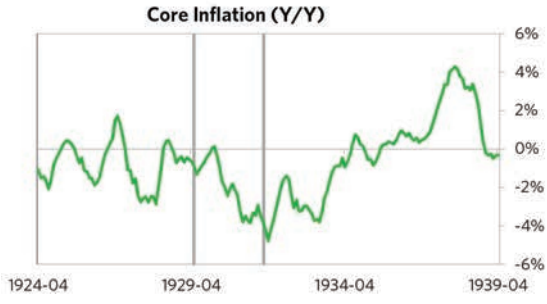
The Depression Phase

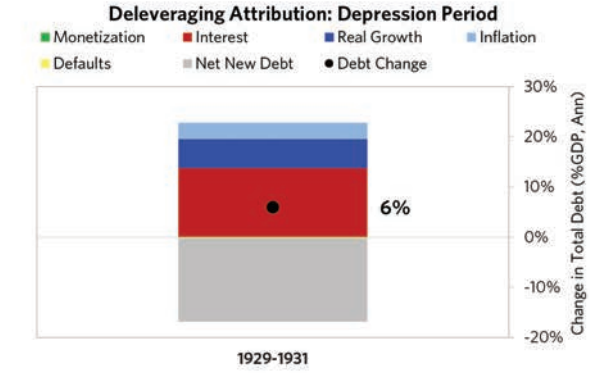
Eventually the cycle turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1929 to 1931. High debt levels left the United Kingdom vulnerable to a shock—which came in the form of ripples from a stock crash in the US and the early Great Depression. The United Kingdom suffered from self-reinforcing declines in GDP (falling by 10%), and in stock prices (falling by 61%). Unemployment rates increased by 7%. As shown in the attribution chart to the right, even though the United Kingdom needed a deleveraging, its debt as a % GDP went up by 13% (6% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by falling real incomes. This was partially offset by paying down existing debt.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







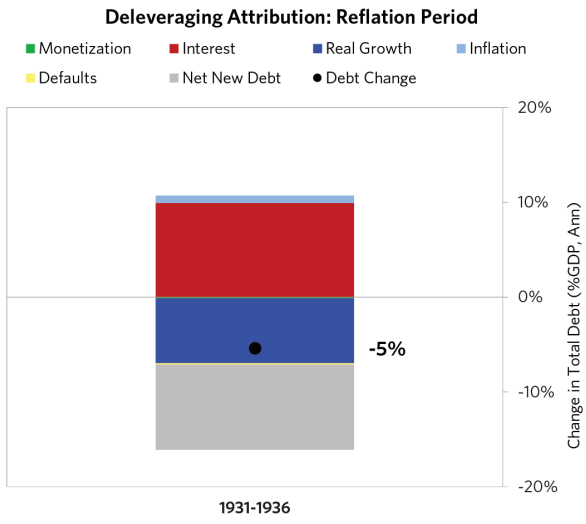


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United Kingdom 1927–1936 Case Auto-Summary (cont.)

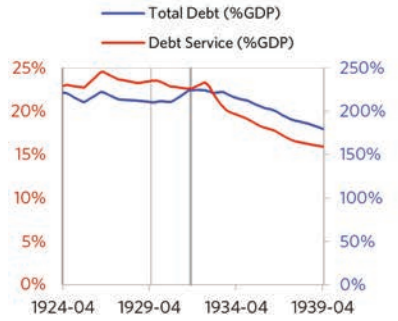
The Reflation Phase

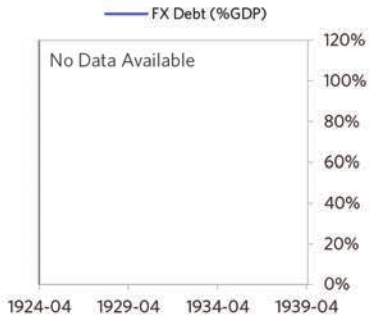
After a slightly shorter than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1931. In terms of monetary policy, the government broke the peg to gold, M0 increased by 2% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -8% during the stimulative phase. Over the cycle, the United Kingdom was not aggressive in managing its financial institutions and bad debts, pulling 1 out of 9 classic policy levers. This and other stimulative measures helped bring nominal growth well above nominal interest rates (with growth averaging 4% during this period and sovereign long rates falling to 3%). During this phase, unemployment rates declined by 8% and debt as a % of GDP fell by 29% (5% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven primarily by paying down existing debt and to a lesser extent by rising real incomes. This was partially offset by interest payments financed with new debt. It took 5 years before real GDP reached its prior peak and equity prices in USD terms recovered within 8 years.

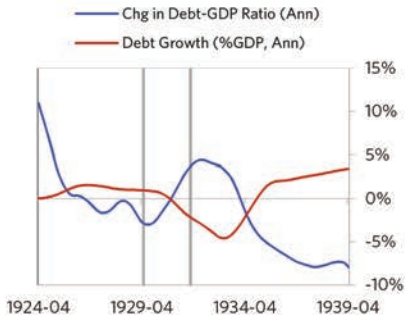


United Kingdom 1927–1936 Chart Deck Appendix

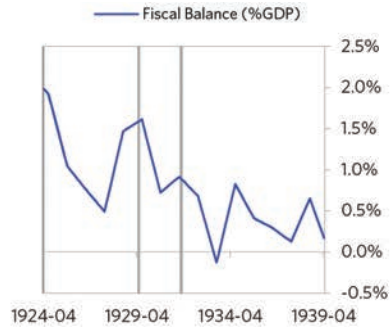
Indebtedness



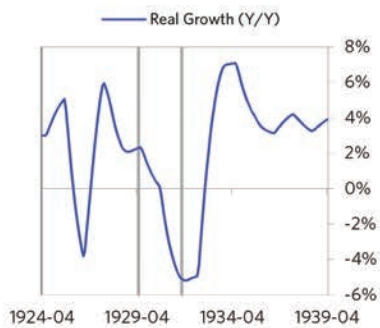


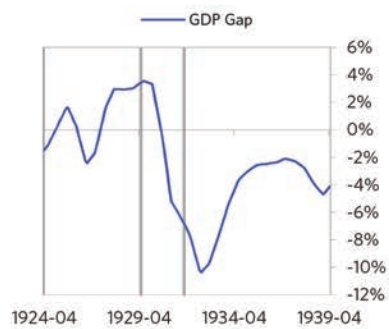


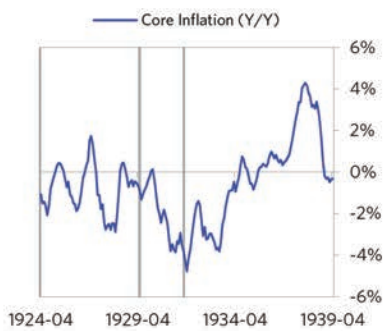
Monetary and Fiscal Policy

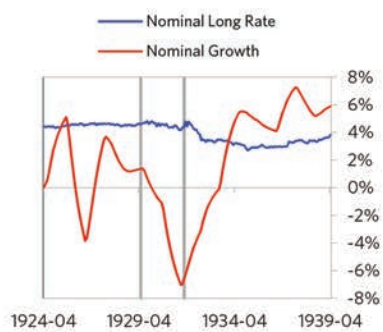


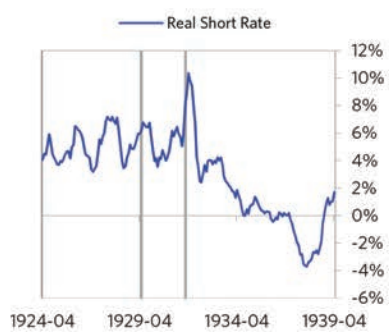
Economic Conditions





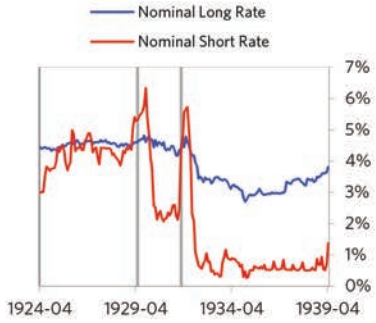


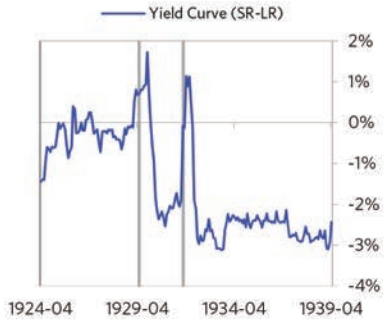


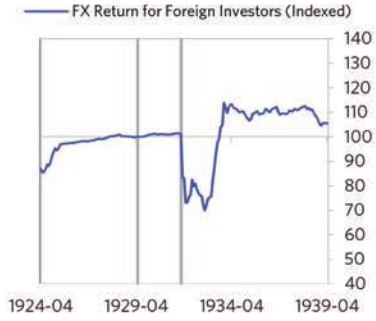


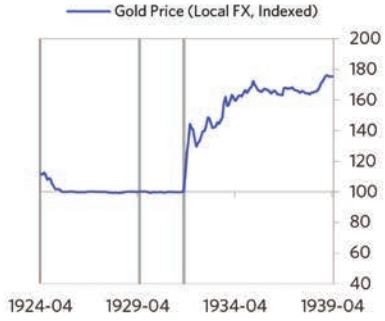
United Kingdom 1927–1936 Chart Deck Appendix (cont.)

Markets

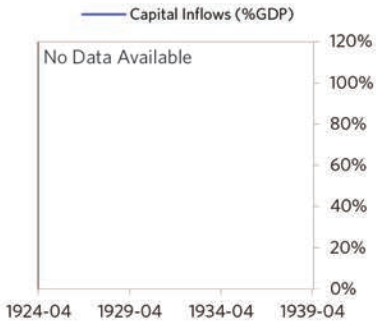


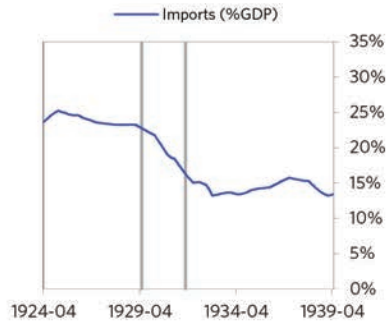


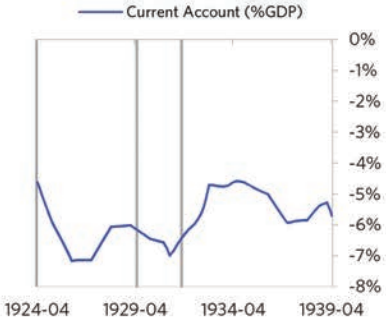


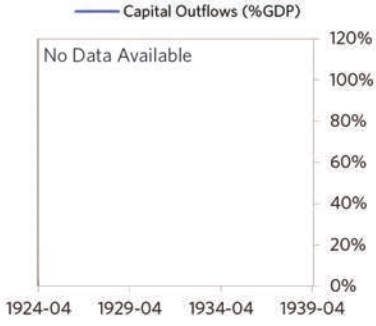


External Position









Japan 1925–1936 Case Auto-Summary

As shown in the charts to the right, Japan experienced a classic deflationary deleveraging cycle between 1925 and 1936.

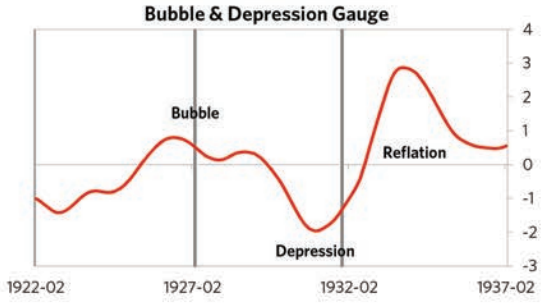
The Bubble Phase

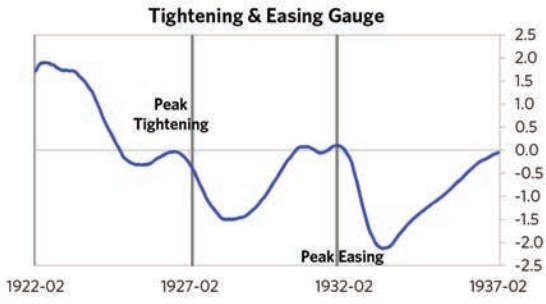
Unlike many other cases, Japan didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts reaching 65% of GDP prior to the crisis. In this case, the debt was in Japan's domestic currency, and the majority was owned domestically, too.

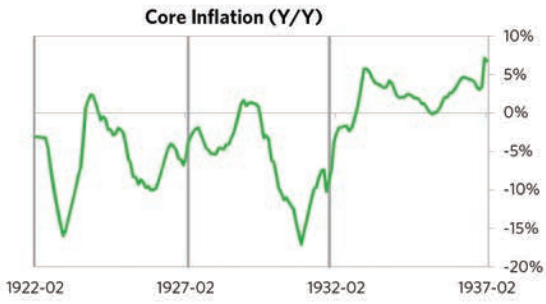
The Depression Phase

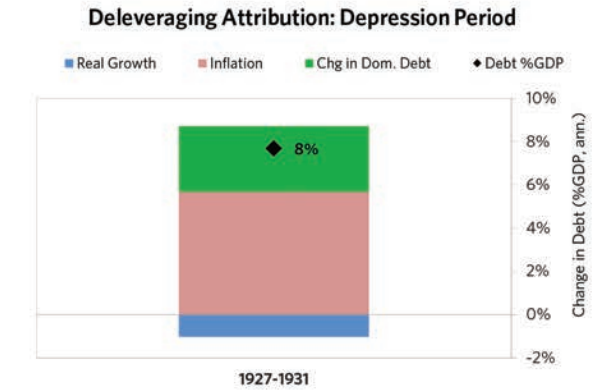
Eventually the cycle turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1927 to 1931. High debt levels left Japan vulnerable to a shock—which came in the form of the 1929 global stock market crash. Japan suffered from self-reinforcing declines in GDP (falling by 4%), and in stock prices (falling by 47%). Japan's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Japan needed a deleveraging, its debt as a % GDP went up by 36% (8% annualized).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









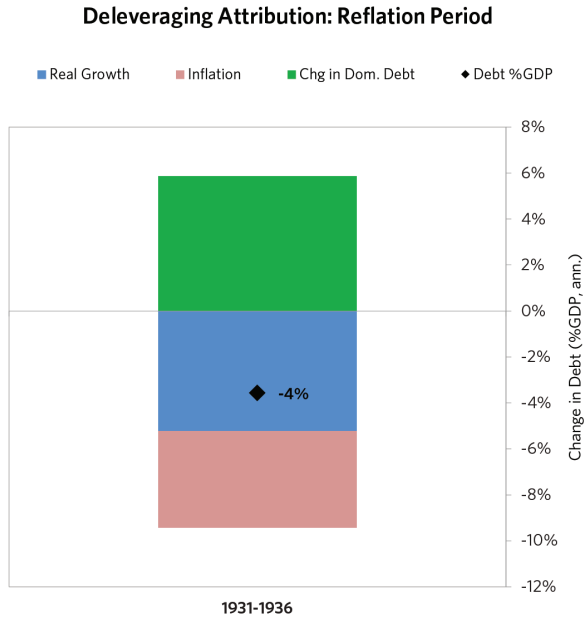
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Japan 1925–1936 Case Auto-Summary (cont.)

The Reflation Phase

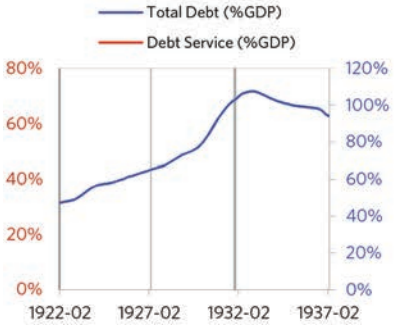
After a slightly longer than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1931. In terms of monetary policy, the government broke the peg to gold, interest rates were ultimately pushed down to 2%, and real FX averaged -26% during the stimulative phase. Over the cycle, Japan was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 classic policy levers. This stimulation helped bring nominal growth above nominal interest rates (with growth averaging 4.7% during this period and sovereign long rates falling to 3.9%). During this phase, debt as a % of GDP fell by 18% (4% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth.

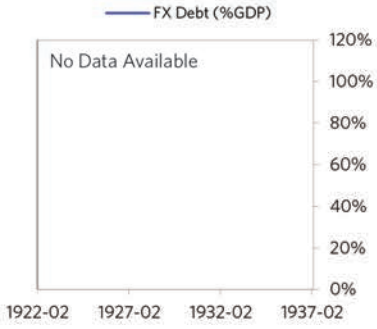
The crisis had a notable impact on the politics of Japan, as it helped set the stage for Hideki Tojo, whom many people consider a populist leader, to take power.

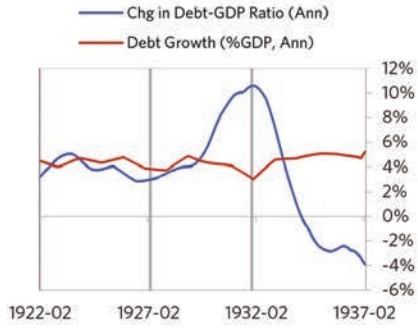


Japan 1925–1936 Chart Deck Appendix

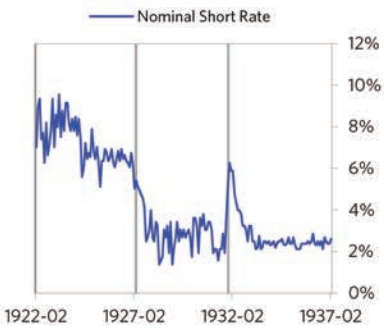
Indebtedness

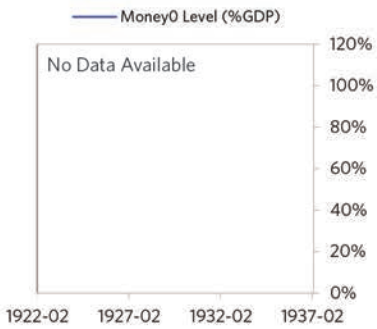


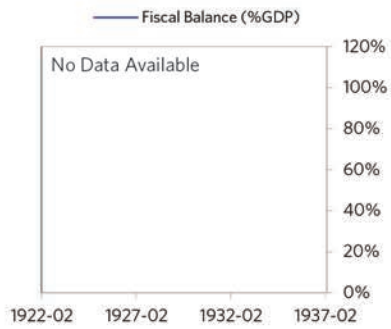




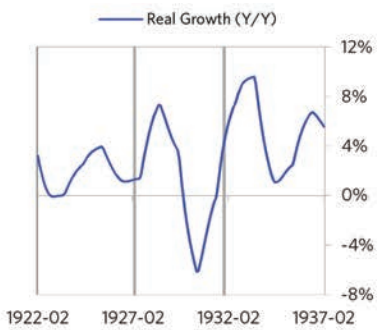
Monetary and Fiscal Policy

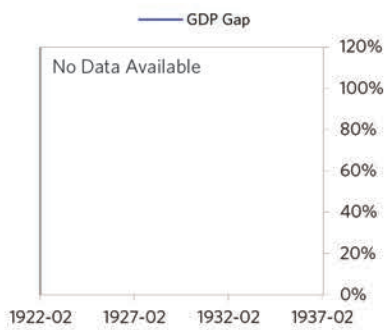


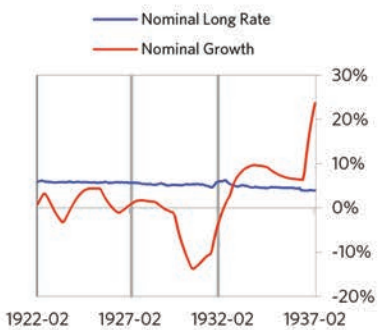




Economic Conditions

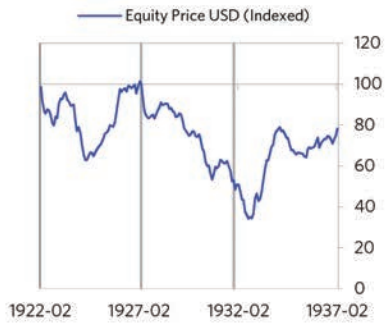


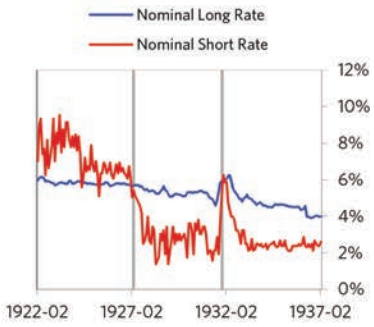


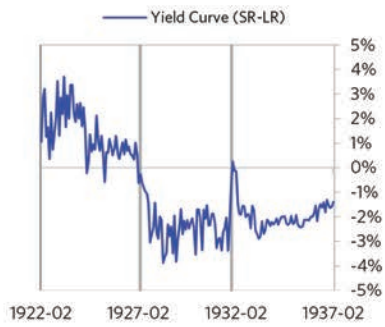


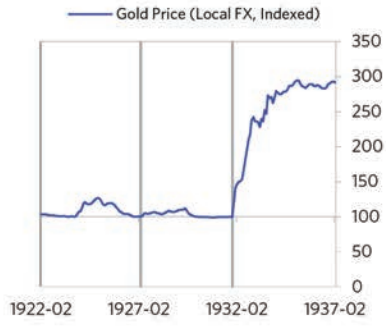
Japan 1925–1936 Chart Deck Appendix (cont.)

Markets

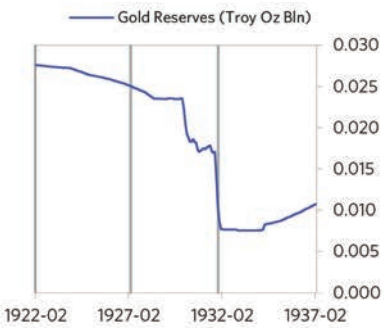


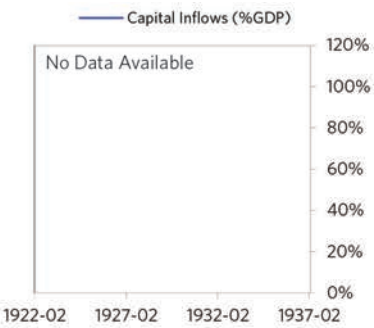


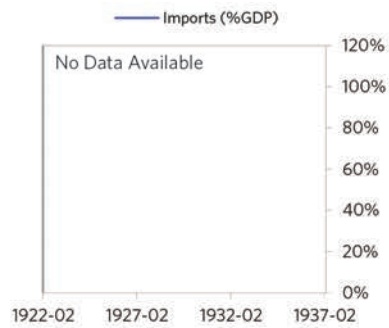


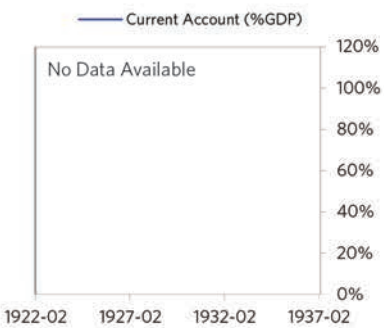


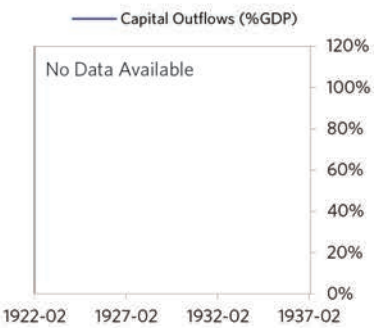
External Position











France 1926–1938 Case Auto-Summary

As shown in the charts to the right, France experienced a classic deflationary deleveraging cycle between 1926 and 1938.

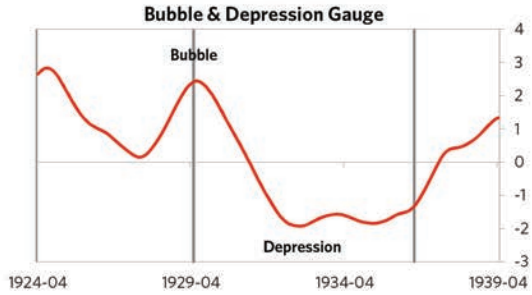
The Bubble Phase

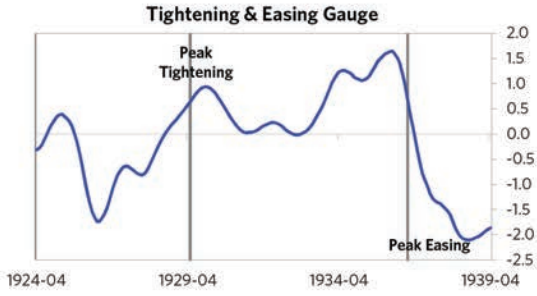
Between 1926 and 1929, France experienced a bubble that was driven by a self-reinforcing cycle of strong growth and strong equity returns. Debts actually declined by 13% of GDP during the bubble to a pre-crisis level of 205% of GDP. In this case, the debt was in France's domestic currency, and the majority was owned domestically, too. Growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 9%). Furthermore, strong asset returns (equities averaged 45% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

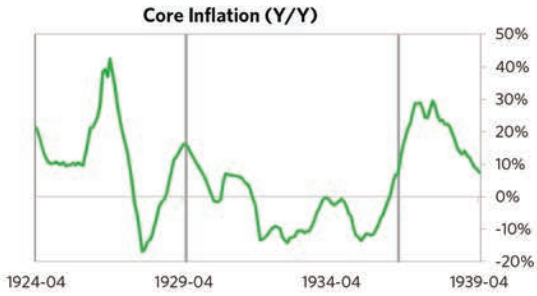
The Depression Phase

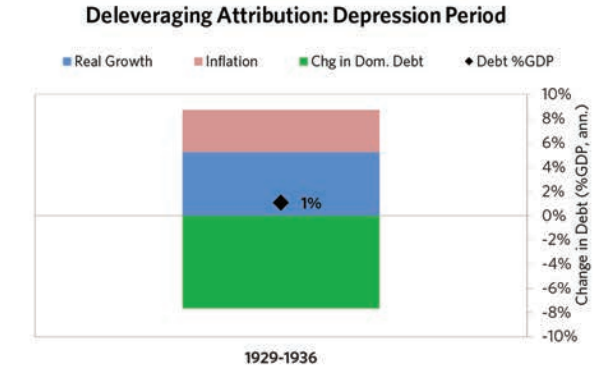
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1929 to 1936. High debt levels left France vulnerable to a shock—which came in the form of ripples from a stock crash in the US and the early Great Depression. France suffered from self-reinforcing declines in GDP (falling by 17%), and in stock prices (falling by 57%). France's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though France needed a deleveraging, its debt as a % GDP was roughly flat through this period.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









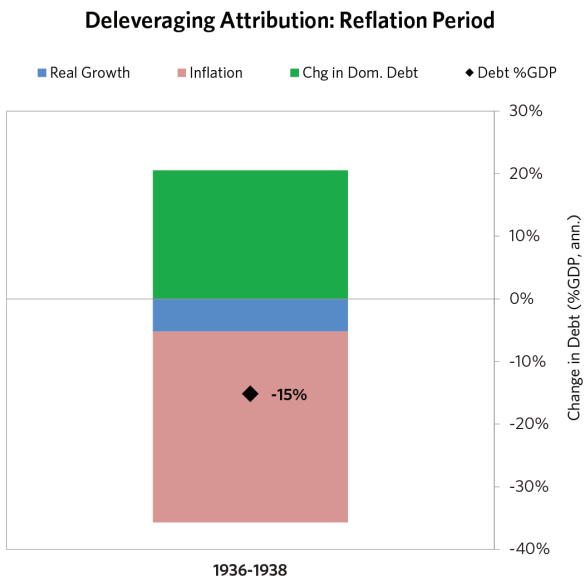
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

France 1926–1938 Case Auto-Summary (cont.)

The Reflation Phase

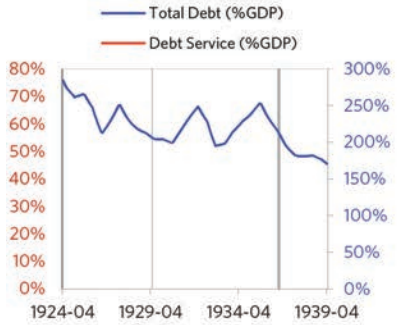
After a relatively long bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1936. In terms of monetary policy, the government broke the peg to gold, interest rates were ultimately pushed down to 2%, and real FX averaged -4% during the stimulative phase. Importantly, policy makers allowed inflation to run high (averaging 10% during this period), which boosted nominal growth and helped reduce the domestic debt burden. Over the cycle, France was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 classic policy levers. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 15% during this period and sovereign long rates falling to 4%). During this phase, debt as a % of GDP fell by 37% (15% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher inflation. It took 21 years before real GDP reached its prior peak.

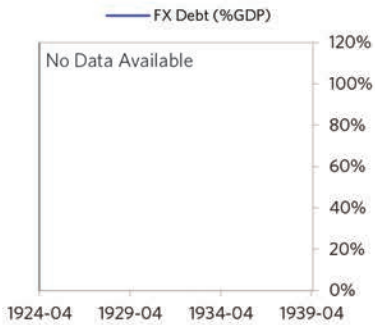
The crisis had a notable impact on the politics of France, as it helped set the stage for Leon Blum, whom many people consider a populist leader, to take power in 1936.

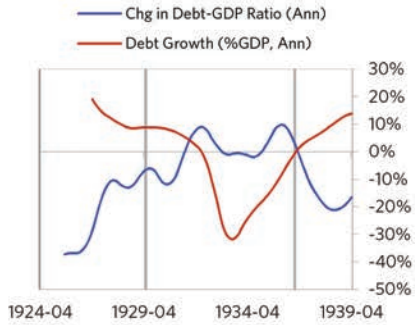


France 1926–1938 Chart Deck Appendix

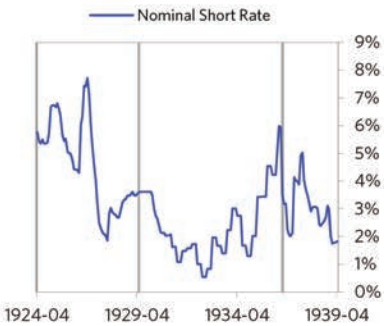
Indebtedness

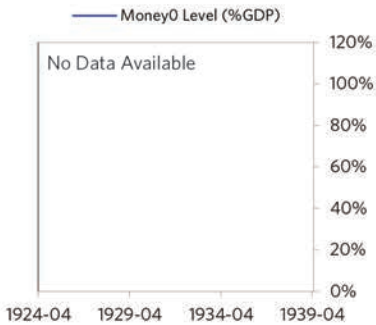


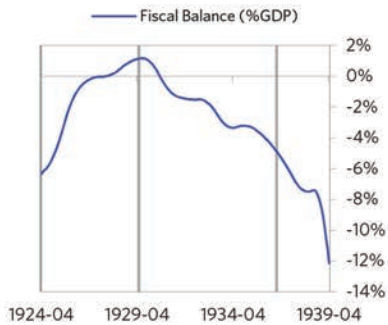




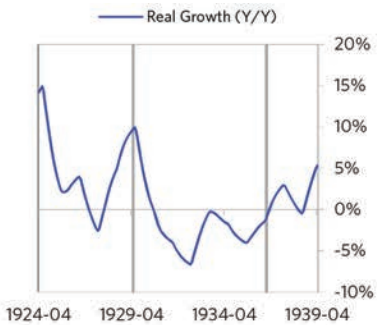
Monetary and Fiscal Policy

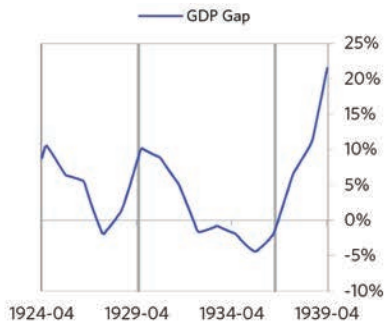


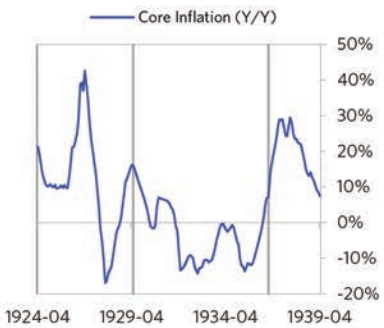


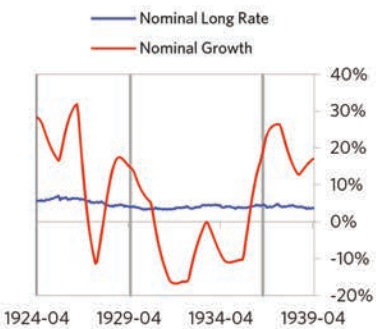


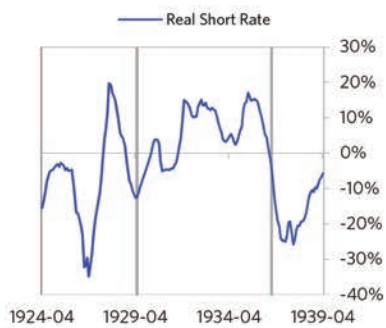
Economic Conditions





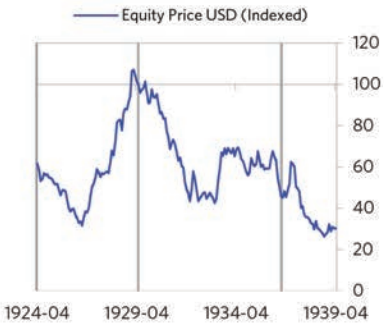


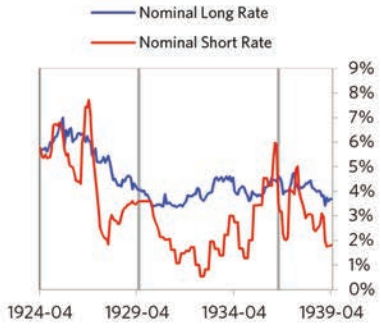


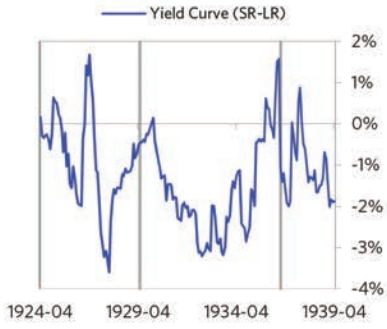


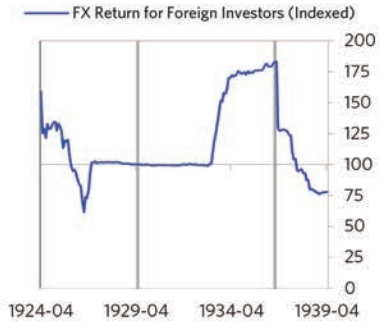
France 1926–1938 Chart Deck Appendix (cont.)

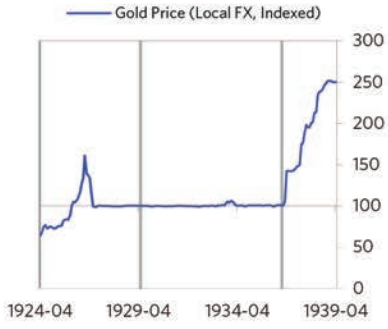
Markets



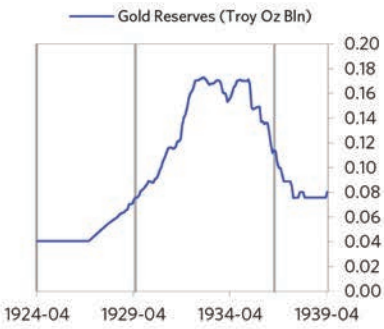


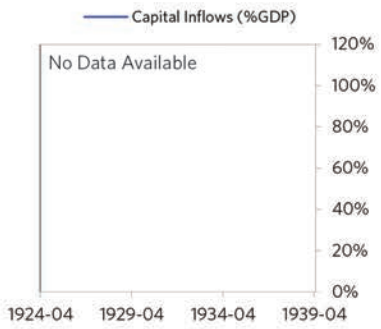


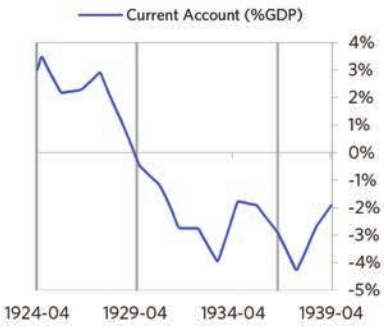


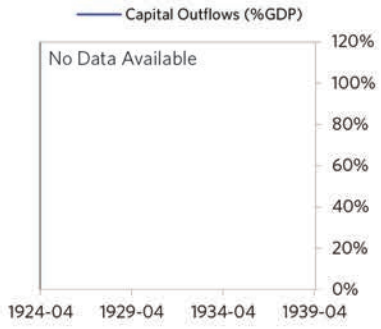


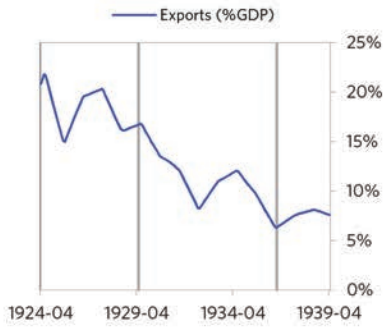
External Position











United Kingdom 1941–1967 Case Auto-Summary

As shown in the charts to the right, the United Kingdom experienced a classic wartime deflationary deleveraging cycle between 1941 and 1967. As is typical for winners of big wars, the United Kingdom experienced a brief postwar recession as the economy transitioned away from war production, and a more orderly deleveraging.

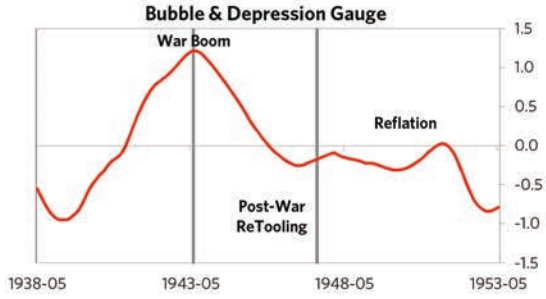
The War Phase

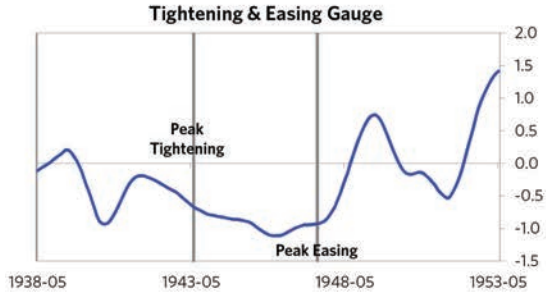
Unlike the typical case that entails a bubble, this debt crisis had its roots in WW2. During the war, the United Kingdom borrowed a lot of money to finance its big fiscal deficit, shifted much of its economy to war production, and shifted much of its workforce to the armed services and war production. For these reasons, the economic stats are not reflective of typical economic linkages. Through the war, debts rose sharply. In this case, the debt was in the United Kingdom's domestic currency, and the majority was owned domestically, too. Aided by wartime spending, growth was strong through this period (at 6%), while levels of economic activity were high (the GDP gap peaked at 10%). Meanwhile, strong asset returns (equities averaged 16% annualized returns over the war period) helped to stimulate growth.

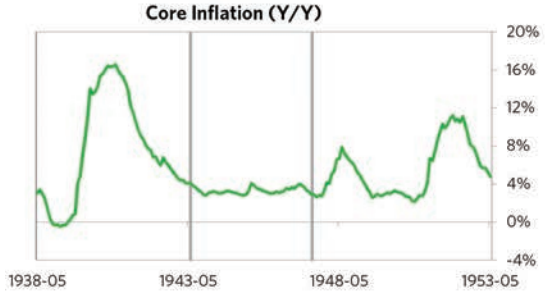
The Post-War Phase

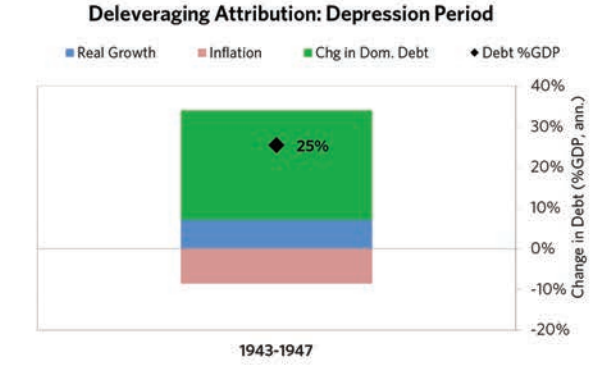
As the war neared an end, the United Kingdom entered a postwar recession, which ran from 1943 to 1947. Since the United Kingdom won the war, its post-war slump was less bad than it was for the losers. Nevertheless, the United Kingdom suffered from self-reinforcing declines in GDP (falling by 15%). As shown in the attribution chart to the right, even though the United Kingdom needed a deleveraging, its debt as a % GDP went up by 102% (25% annualized) as incomes declined and as the government continued to shoulder war-related costs (with a peak fiscal deficit of 31% of GDP during the ugly period).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







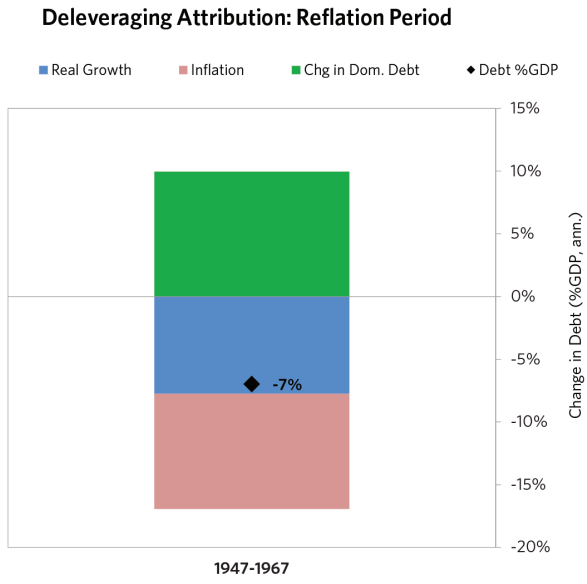


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United Kingdom 1941-1967 Case Auto-Summary (cont.)

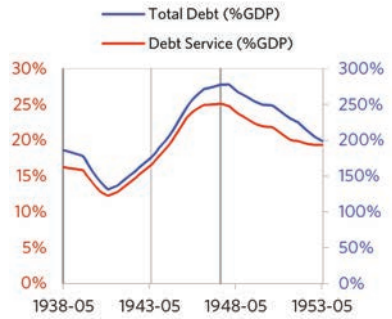
The Reflation Phase

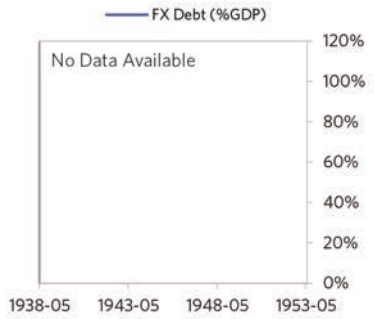
After a slightly longer than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1947. In terms of monetary policy, the government devalued the currency versus gold by 30%, M0 actually decreased by 8% of GDP, interest rates were ultimately pushed down to 1%, and real FX averaged -10% during the stimulative phase. Importantly, policy makers allowed inflation to run high (averaging 4% during this period), which boosted nominal growth and helped reduce the domestic debt burden. This and other stimulative measures helped bring nominal growth well above nominal interest rates (with growth averaging 7% during this period and sovereign long rates falling to 2%). During this phase, unemployment rates were flat and debt as a % of GDP fell by 139% (7% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher inflation. It took 10 years before real GDP reached its prior peak.

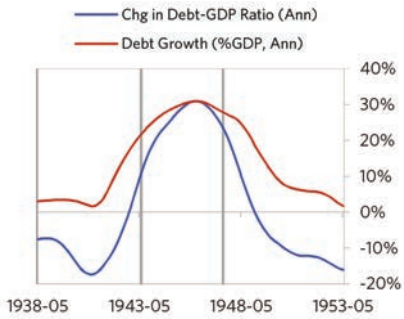


United Kingdom 1941–1967 Chart Deck Appendix

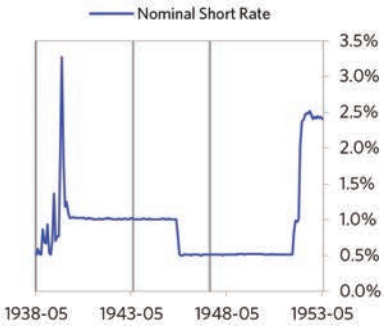
Indebtedness

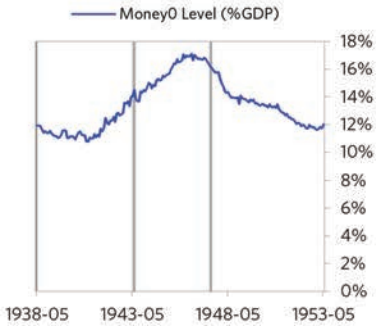


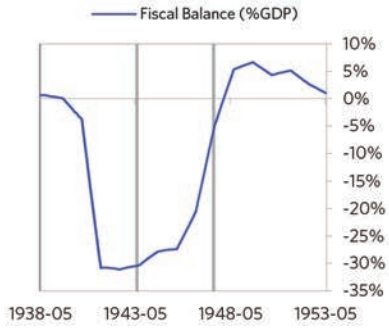




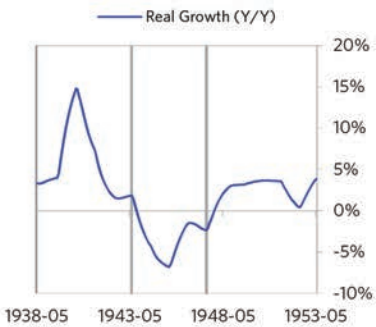
Monetary and Fiscal Policy

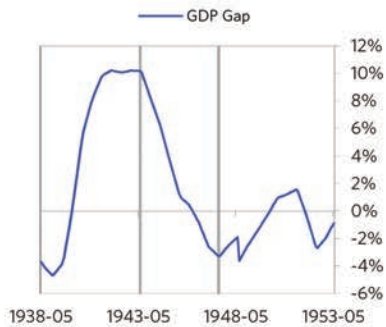


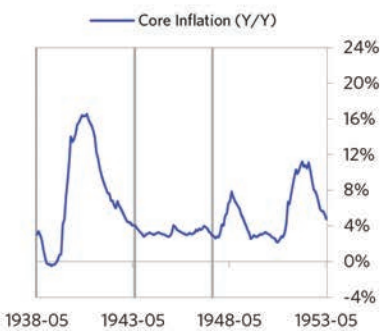


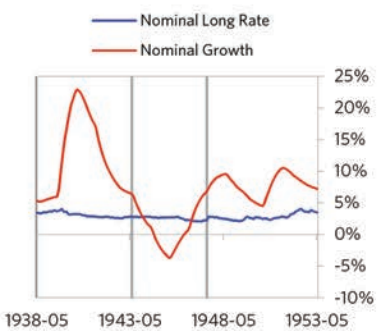


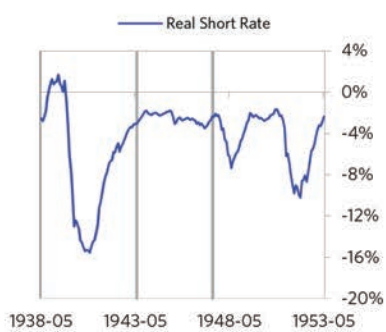
Economic Conditions





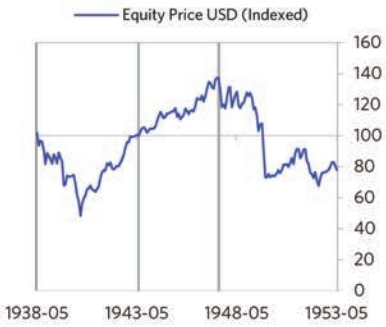


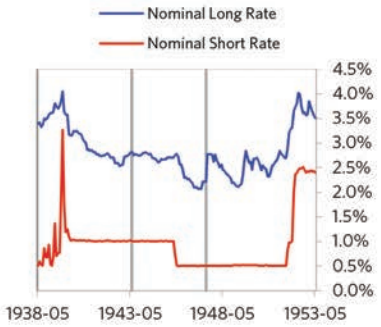


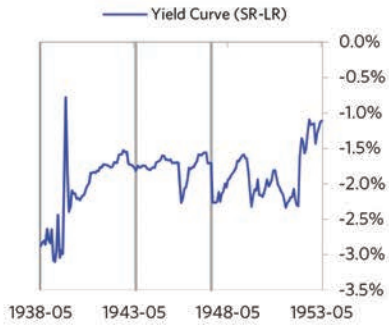


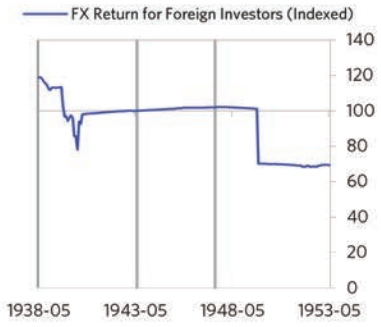
United Kingdom 1941–1967 Chart Deck Appendix (cont.)

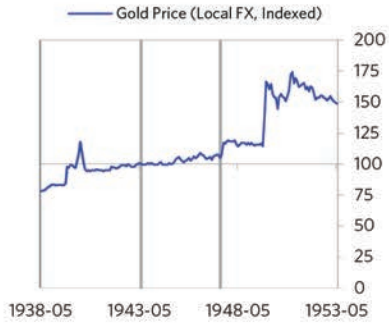
Markets



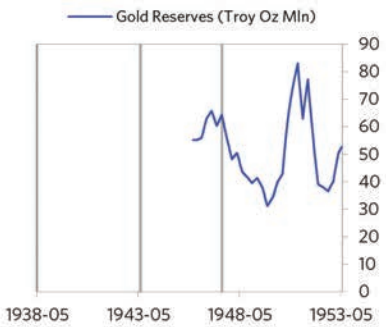


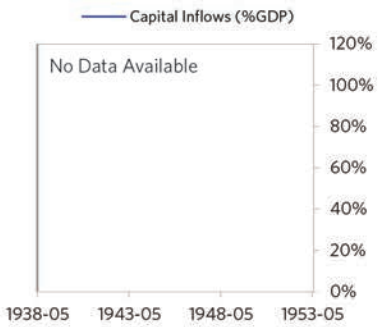


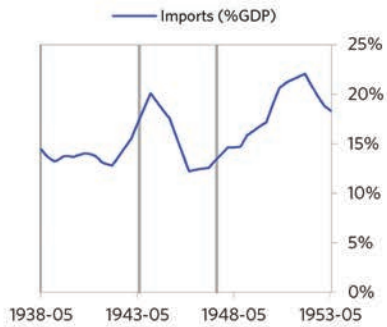


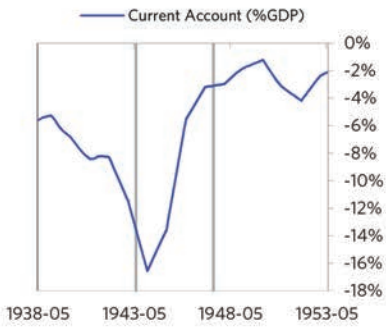


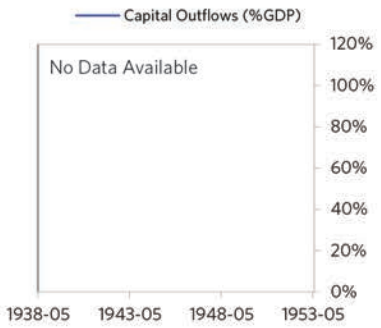
External Position

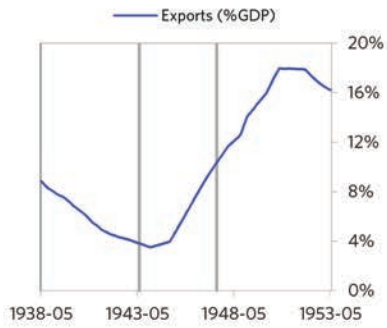






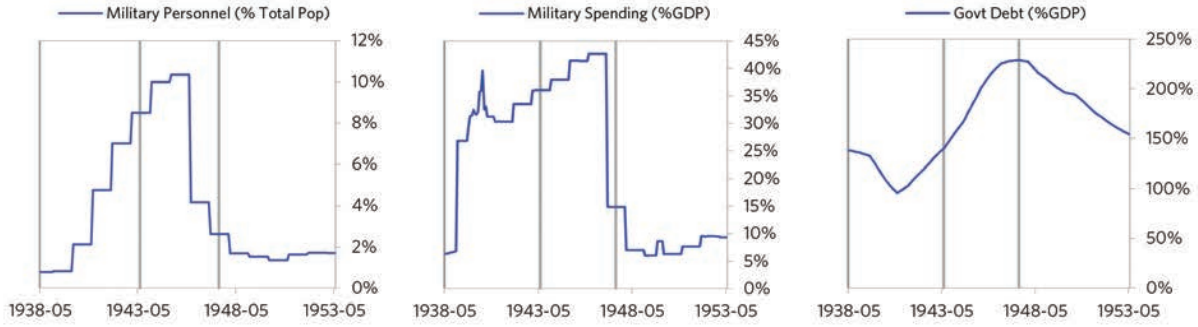






United Kingdom 1941–1967 Chart Deck Appendix (cont.)

Government and Military



United States 1943–1951 Case Auto-Summary

As shown in the charts to the right, the United States experienced a classic wartime deflationary deleveraging cycle between 1943 and 1951. As is typical for winners of big wars, the United States experienced a brief postwar recession as the economy transitioned away from war production, and a more orderly deleveraging.

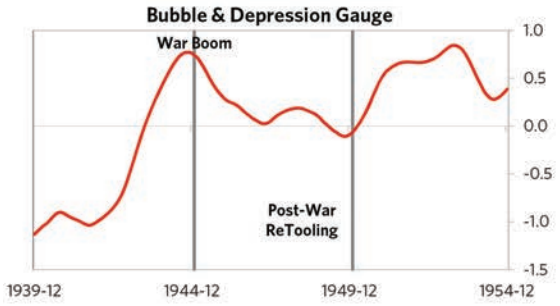
The War Phase

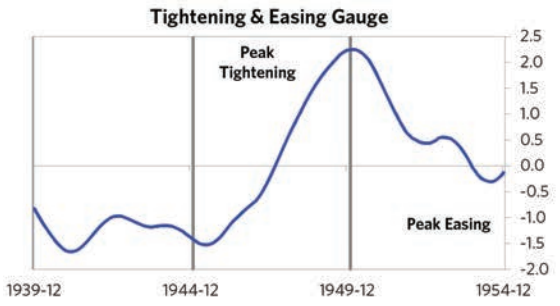
Unlike the typical case that entails a bubble, this debt crisis had its roots in WW2. During the war, the United States borrowed a lot of money to finance its big fiscal deficit, shifted much of its economy to war production, and shifted much of its workforce to the armed services and war production. For these reasons, the economic stats are not reflective of typical economic linkages. Through the war, debts rose to 150% of GDP. In this case, the debt was in the United States's domestic currency, and the majority was owned domestically, too. Aided by wartime spending, growth was strong through this period (at 13%), while levels of economic activity were high (the GDP gap peaked at 19%). Meanwhile, strong asset returns (equities averaged 15% annualized returns over the war period) helped to stimulate growth.

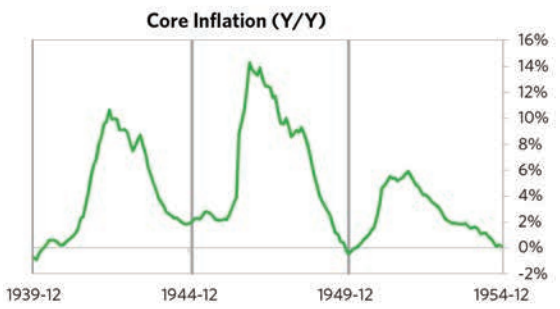
The Post-War Phase

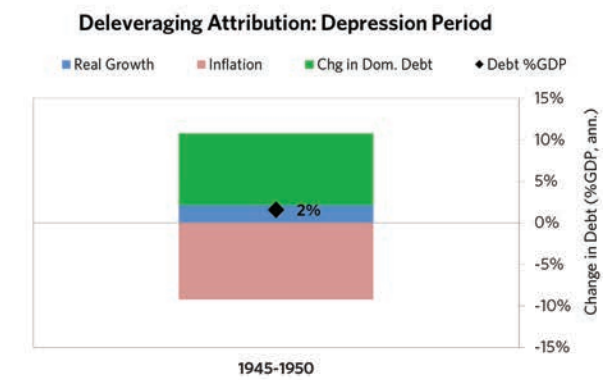
When the fighting ended, the United States entered a postwar recession, which ran from 1945 to 1950. Since the United States won the war, its post-war slump was less bad than it was for the losers. Nevertheless, the United States suffered from self-reinforcing declines in GDP (falling by 13%). Unemployment rates increased by 5%. As shown in the attribution chart to the right, even though the United States needed a deleveraging, its debt as a % GDP was roughly flat through this period.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







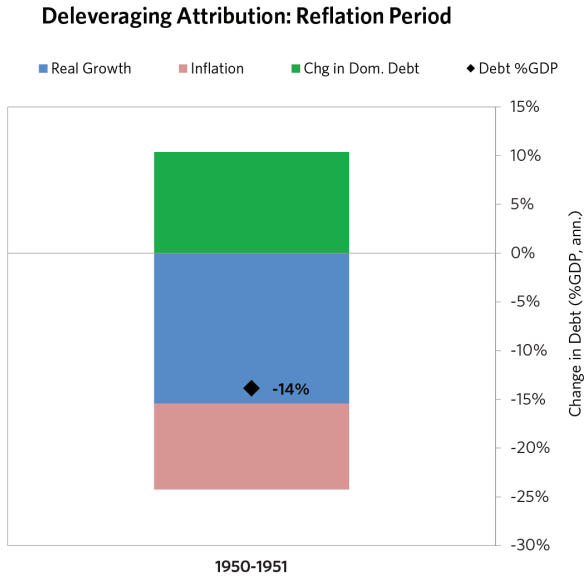


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United States 1943–1951 Case Auto-Summary (cont.)

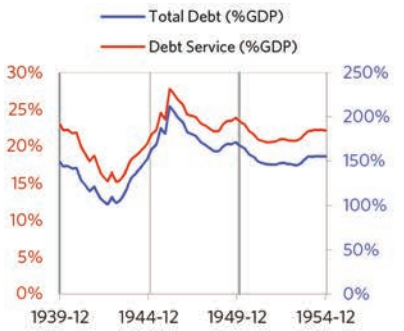
The Reflation Phase

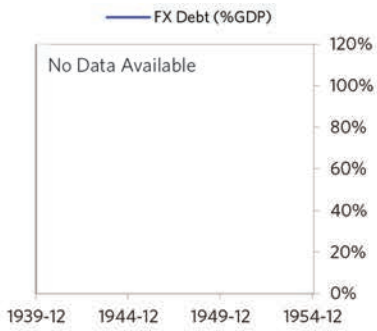
After a relatively long bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1950. In terms of monetary policy, M0 actually decreased by 0.9% of GDP and interest rates were ultimately pushed down to 1% during the stimulative phase. The central bank's choice to stay easy even as activity picked up sharply helped bring nominal growth well above nominal interest rates (with growth averaging 11% during this period and sovereign long rates averaging 2%). During this phase, unemployment rates declined by 2% and debt as a % of GDP fell by 22% (14% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 6 years before real GDP reached its prior peak.

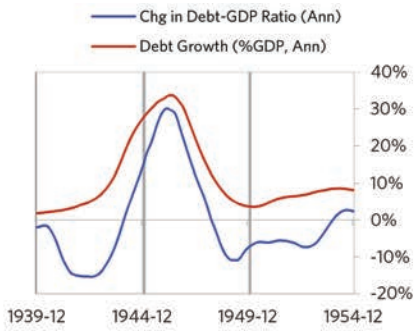


United States 1943–1951 Chart Deck Appendix

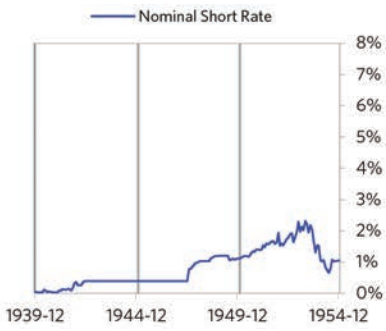
Indebtedness

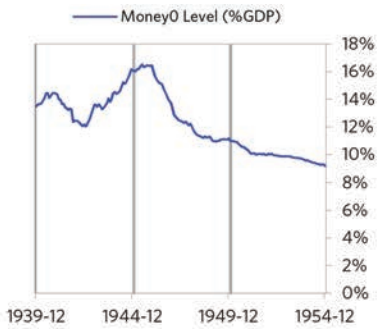


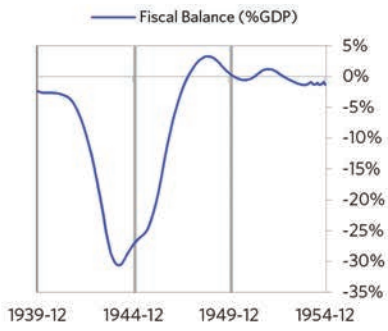




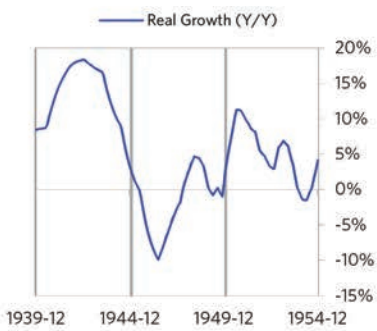
Monetary and Fiscal Policy

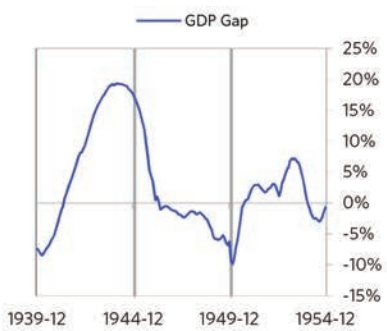


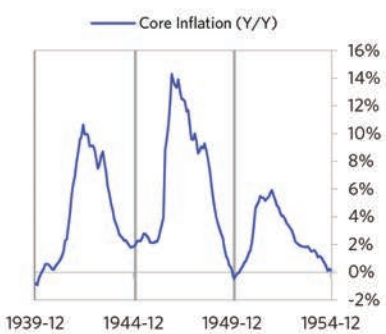


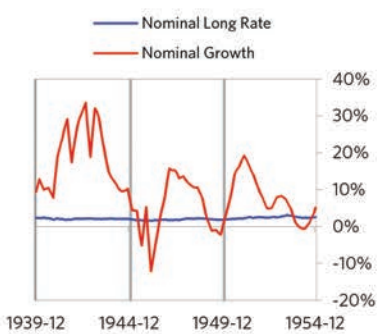


Economic Conditions



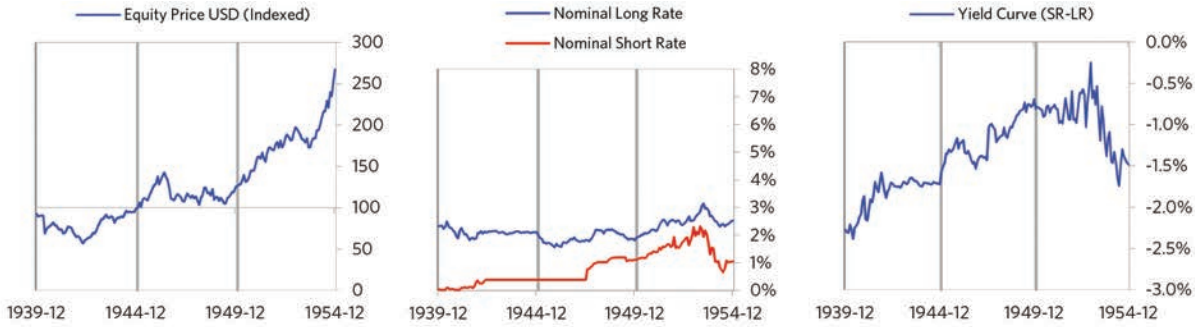


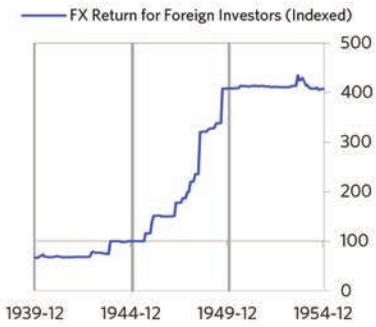




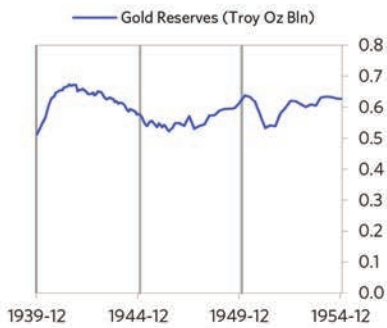
United States 1943–1951 Chart Deck Appendix (cont.)

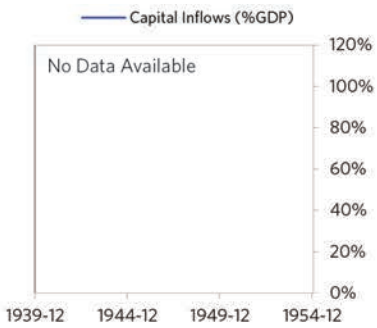
Markets

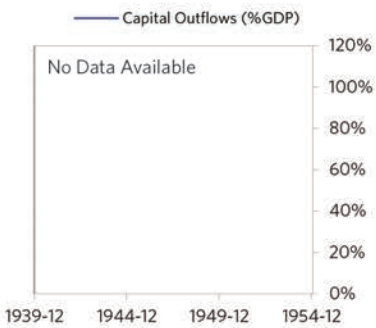




External Position

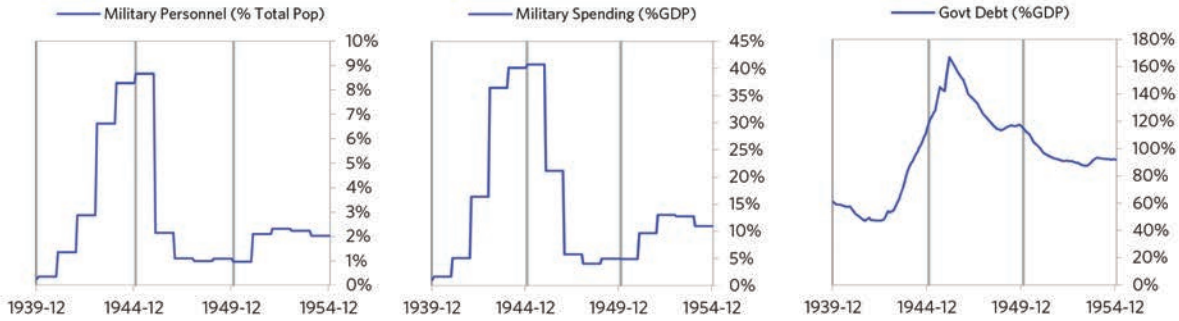






United States 1943–1951 Chart Deck Appendix (cont.)

Government and Military



Norway 1984–1996 Case Auto-Summary

As shown in the charts to the right, Norway experienced a classic deflationary deleveraging cycle between 1984 and 1996.

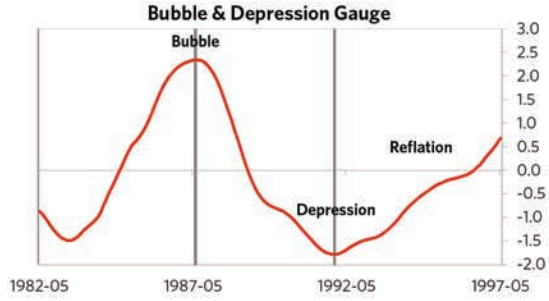
The Bubble Phase

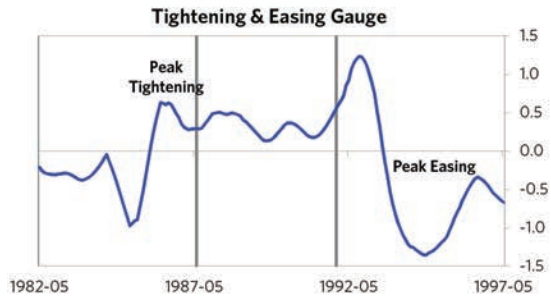
Between 1984 and 1987, Norway experienced a bubble that was driven by a self-reinforcing cycle of strong growth, strong equity returns, and strong housing returns. By the bubble's end, debts had reached a pre-crisis peak of 211% of GDP. In this case, the debt was in Norway's domestic currency, and the majority was owned domestically, too. During the bubble phase, investment inflows were moderately strong, averaging around 4% of GDP, which helped to finance a current account deficit of 2% of GDP. Aided by that capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 5%). Furthermore, strong asset returns (housing prices averaged 19% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a large tightening (with short rates rising around 700 bps). Taken together, these bubble pressures, combined with tightening money and credit, created an unsustainable situation.

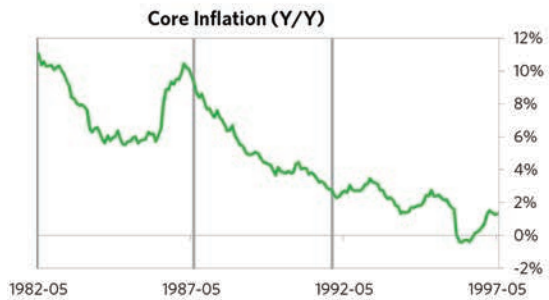
The Depression Phase

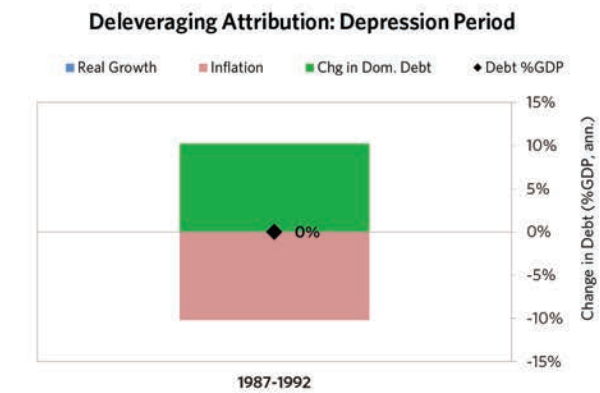
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1987 to 1992. At its pre-crisis peak, debt service reached 58% of GDP, making Norway vulnerable to a shock—which came in the form of ripples from commodity price declines. Norway suffered from self-reinforcing declines in GDP (falling by 4%) and in home prices (falling by 38%). Norway's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Norway needed a deleveraging, its debt as a % GDP was roughly flat through this period.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







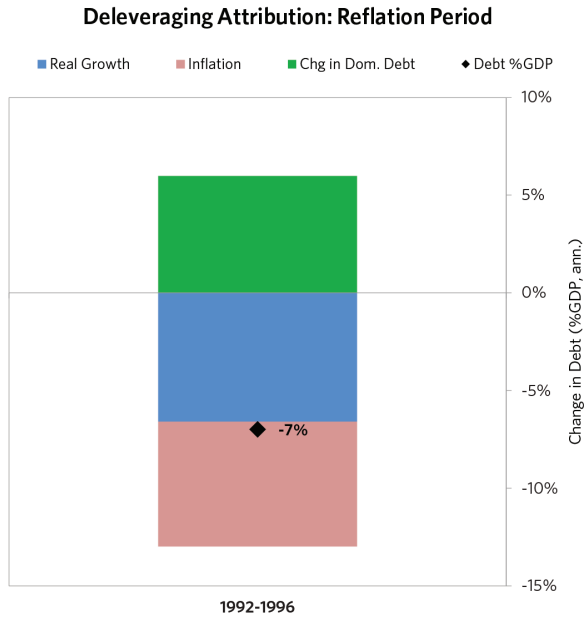


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Norway 1984–1996 Case Auto-Summary (cont.)

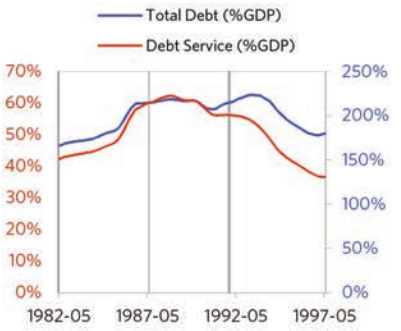
The Reflation Phase

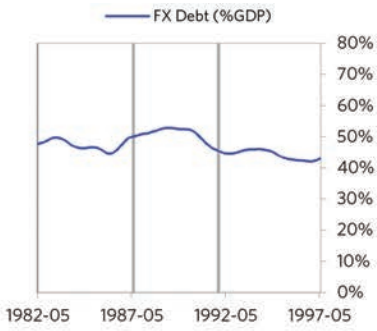
After a relatively long bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1992. In terms of monetary policy, M0 increased by 2% of GDP, interest rates were ultimately pushed down to 4%, and real FX averaged 3% during the stimulative phase. Over the cycle, Norway was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. It also enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth close to nominal interest rates (with growth averaging 6.1% during this period and sovereign long rates falling to 5.5%). During this phase, unemployment rates declined by 4% and debt as a % of GDP fell by 35% (7% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 5 years before real GDP reached its prior peak.

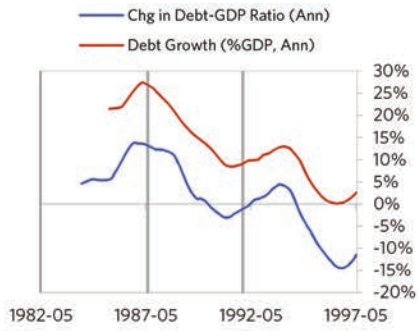


Norway 1984–1996 Chart Deck Appendix

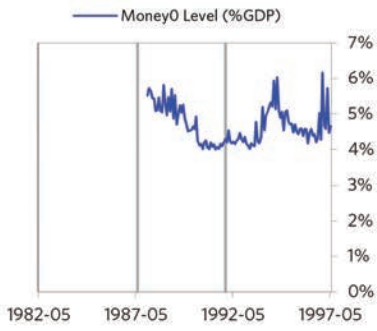
Indebtedness

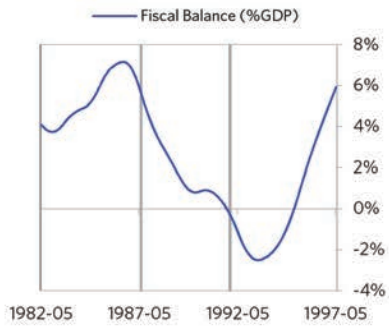




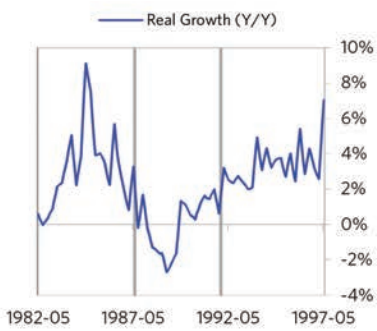


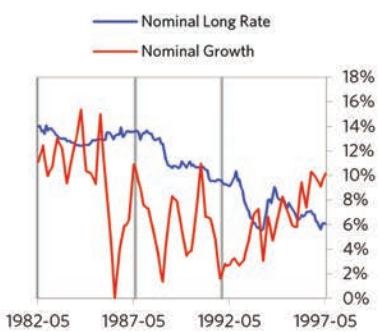
Monetary and Fiscal Policy





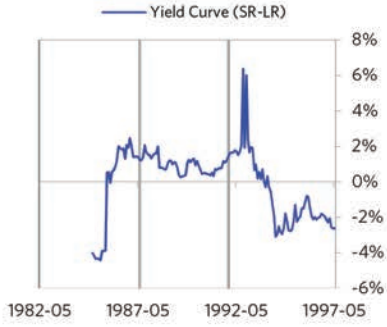
Economic Conditions

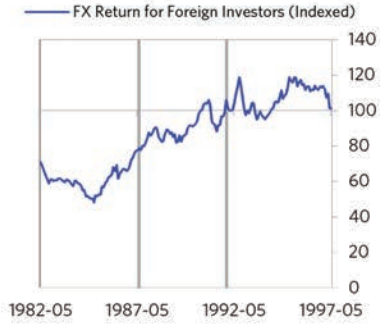


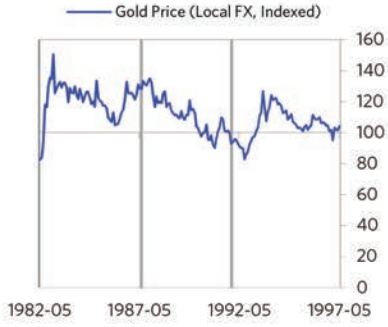


Norway 1984–1996 Chart Deck Appendix (cont.)

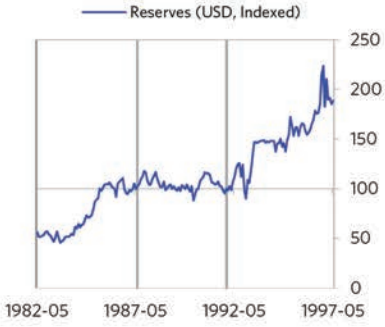
Markets

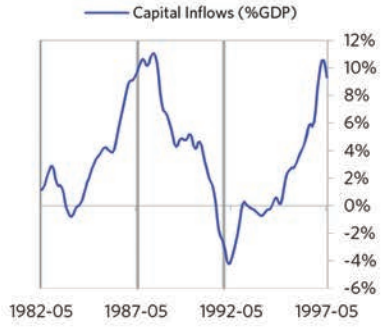


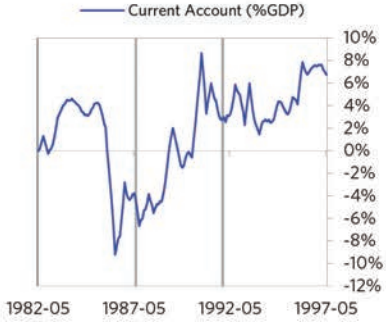


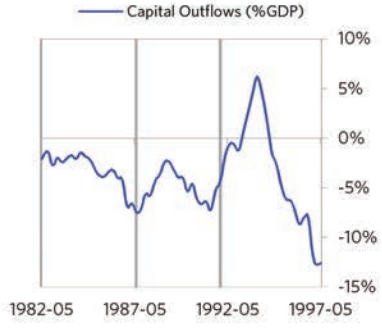


External Position









Finland 1987–2001 Case Auto-Summary

As shown in the charts to the right, Finland experienced a classic deflationary deleveraging cycle between 1987 and 2001.

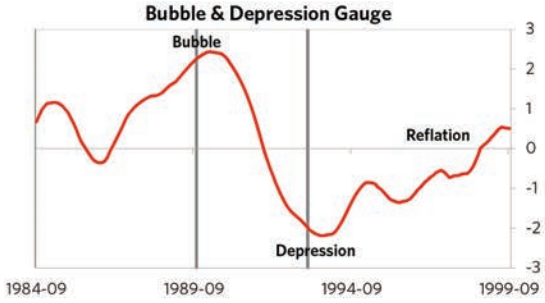
The Bubble Phase

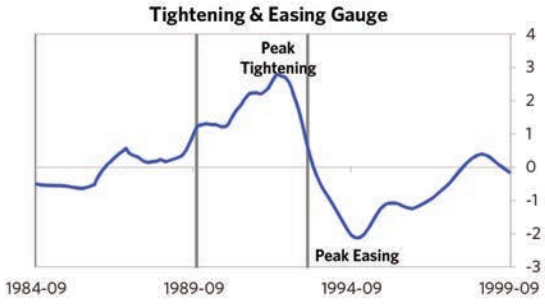
Between 1987 and 1989, Finland experienced a bubble that was driven by a self-reinforcing cycle of strong growth and strong equity returns. By the bubble's end, debts had reached a pre-crisis peak of 272% of GDP. In this case, the debt was in Finland's domestic currency, though a high share was owned by foreigners, which left Finland with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were low but positive, averaging around 3% of GDP, while Finland maintained a current account deficit of 3% of GDP. Aided by that capital, growth was strong (at 5%). Furthermore, strong asset returns (equities averaged 18% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a large tightening (with short rates rising around 700 bps). Competitiveness became an issue, as Finland's real FX peaked at +24%. Taken together, these bubble pressures and Finland's dependence on foreign financing, combined with tightening money and credit, created an unsustainable situation.

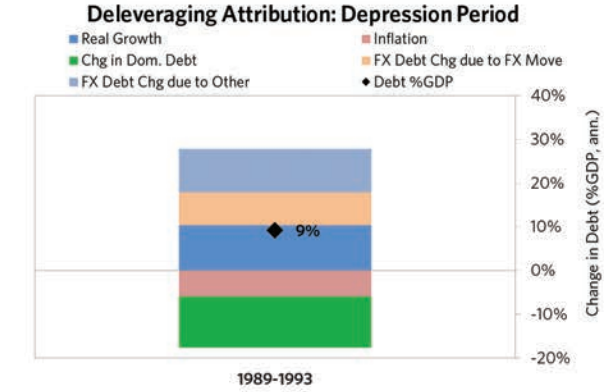
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1989 to 1993. High debt levels left Finland vulnerable to a shock—which came in the form of asset price declines hitting bank solvency. Finland suffered from self-reinforcing declines in GDP (falling by 12%), in stock prices (falling by 36%) and in home prices (falling by 32%). Unemployment rates increased by 13%. Finland's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Finland needed a deleveraging, its debt as a % GDP went up by 32% (9% annualized) as incomes declined.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





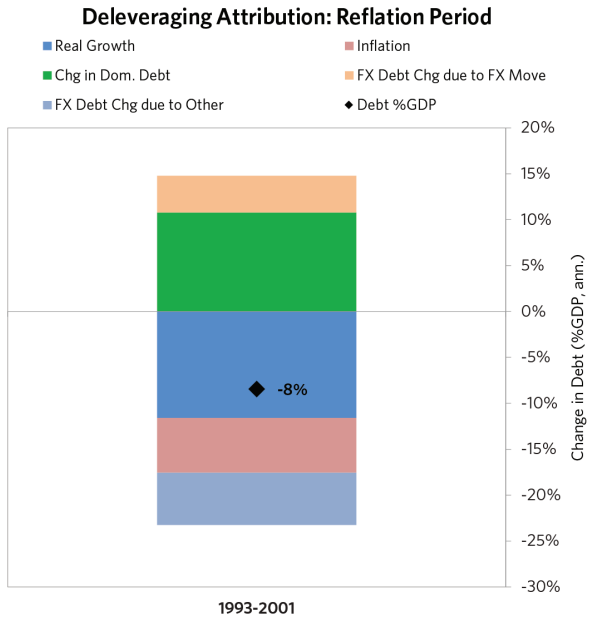


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Finland 1987–2001 Case Auto-Summary (cont.)

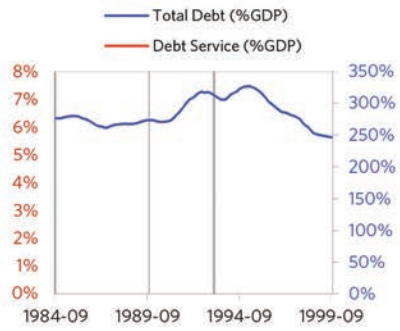
The Reflation Phase

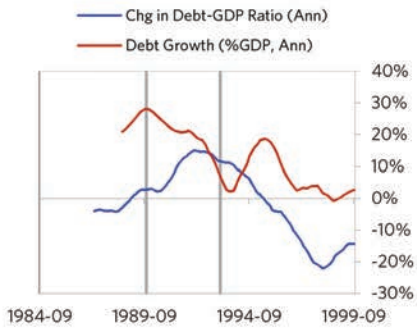
After a slightly longer than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1993. In terms of monetary policy, M0 increased by 7% of GDP, interest rates were ultimately pushed down to 3%, and real FX averaged -10% during the stimulative phase. Over the cycle, Finland was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 6% during this period and sovereign long rates falling to 4%). During this phase, unemployment rates declined by 6% and debt as a % of GDP fell by 72% (8% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 7 years before real GDP reached its prior peak and equity prices in USD terms recovered within 5 years.



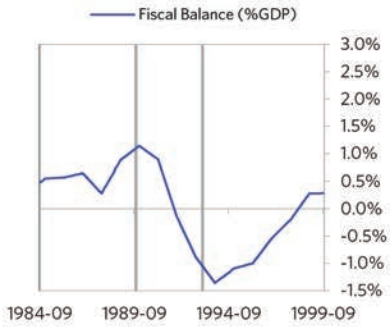
Finland 1987–2001 Chart Deck Appendix

Indebtedness

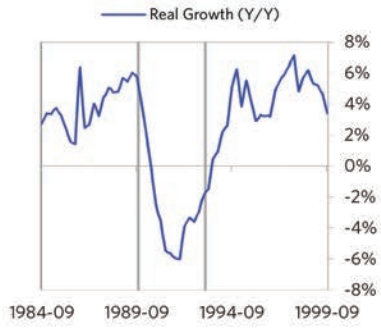


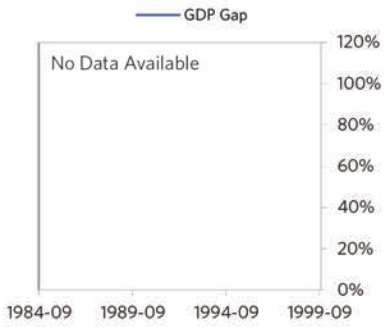


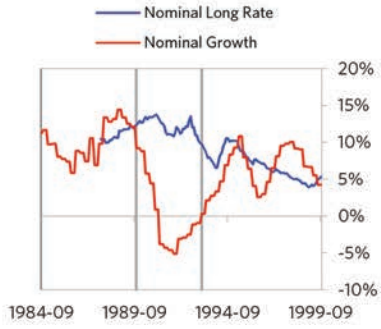
Monetary and Fiscal Policy



Economic Conditions

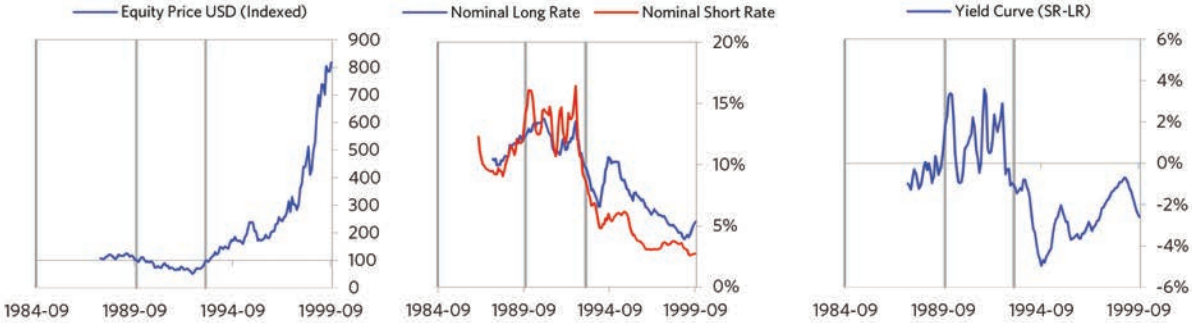


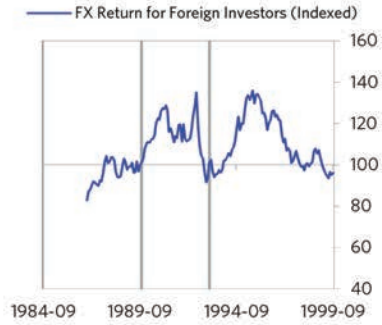


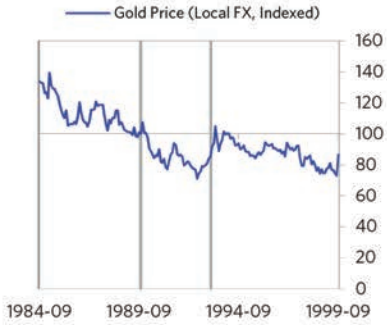


Finland 1987–2001 Chart Deck Appendix (cont.)

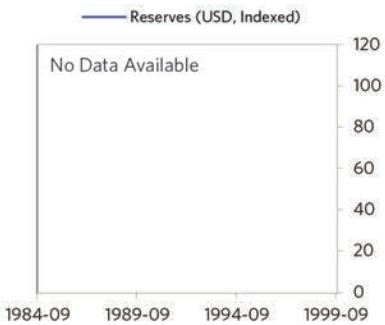
Markets

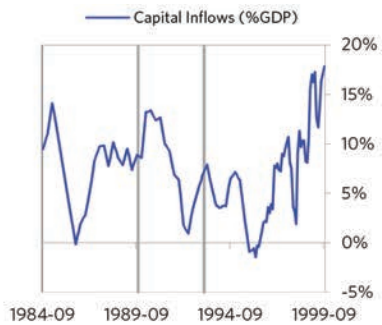


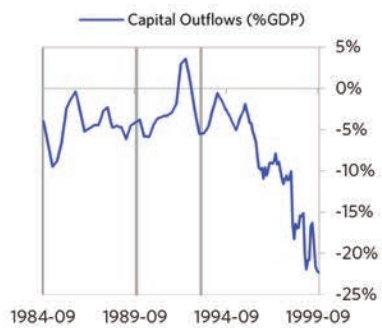




External Position







Sweden 1987–2000 Case Auto-Summary

As shown in the charts to the right, Sweden experienced a classic deflationary deleveraging cycle between 1987 and 2000.

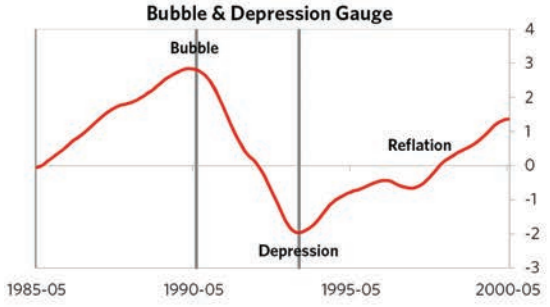
The Bubble Phase

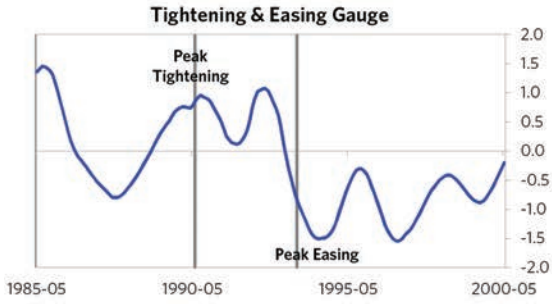
Between 1987 and 1990, Sweden experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth, and strong housing returns. Debts rose by 15% of GDP during the bubble to a pre-crisis peak of 239% of GDP. In this case, the debt was in Sweden's domestic currency, and the majority was owned domestically, too. During the bubble phase, investment inflows were low but positive, averaging around 2% of GDP, while Sweden maintained a current account deficit of 3% of GDP. Aided by that rising debt and capital, growth was moderate (at 2%), while levels of economic activity were high (the GDP gap peaked at 4%). During this bubble period, policy makers initiated a large tightening (with short rates rising around 500 bps). Competitiveness became an issue, as Sweden's real FX peaked at +15%. Taken together, these bubble pressures, combined with tightening money and credit, created an unsustainable situation.

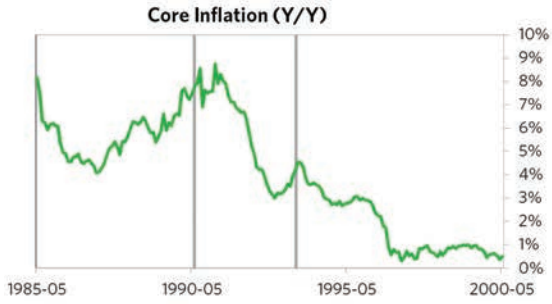
The Depression Phase

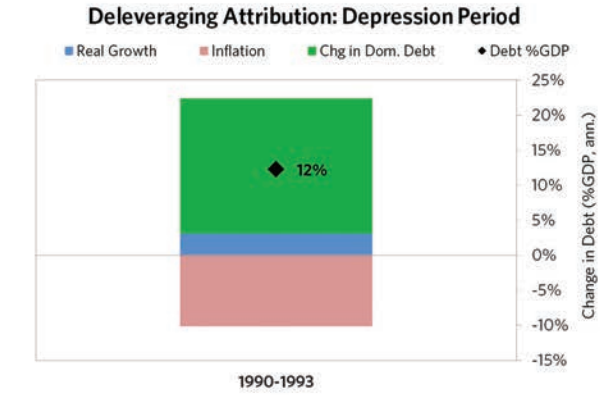
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1990 to 1993. At its pre-crisis peak, debt service reached 65% of GDP, making Sweden vulnerable to a shock—which came in the form of housing price declines hitting bank solvency. Sweden suffered from self-reinforcing declines in GDP (falling by 6%), in stock prices (falling by 34%) and in home prices (falling by 7%). Unemployment rates increased by 9%. Sweden's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Sweden needed a deleveraging, its debt as a % GDP went up by 40% (12% annualized) as incomes declined and as the government had to borrow more in response to the crisis (with a peak fiscal deficit of 10% of GDP during the ugly period).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







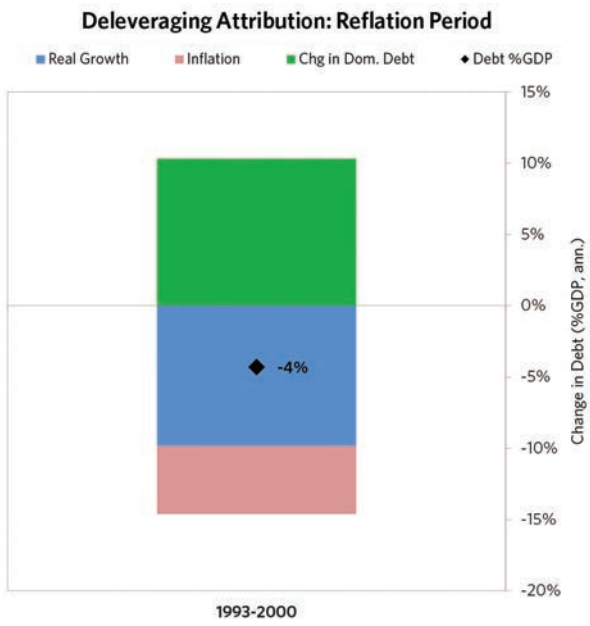


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Sweden 1987–2000 Case Auto-Summary (cont.)

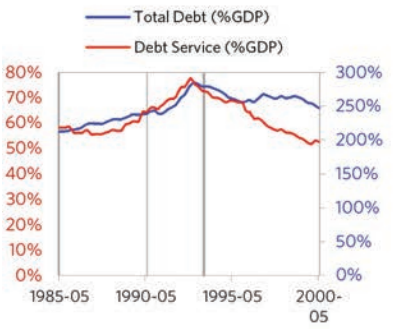
The Reflation Phase

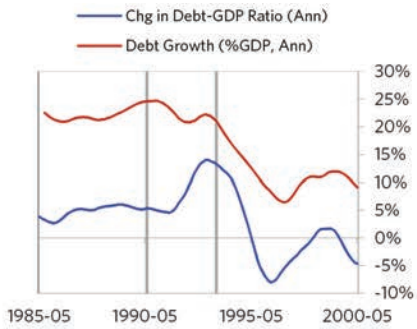
After a relatively short bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 1993. In terms of monetary policy, M0 increased by 5% of GDP, interest rates were ultimately pushed down to 3%, and real FX averaged -5% during the stimulative phase. Over the cycle, Sweden was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth above nominal interest rates (with growth averaging 5% during this period and sovereign long rates falling to 4%). During this phase, unemployment rates declined by 1% and debt as a % of GDP fell by 28% (4% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 3 years before real GDP reached its prior peak and equity prices in USD terms recovered within 4 years.



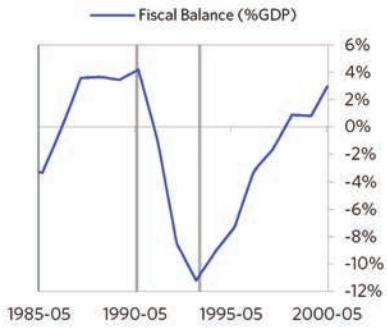
Sweden 1987–2000 Chart Deck Appendix

Indebtedness

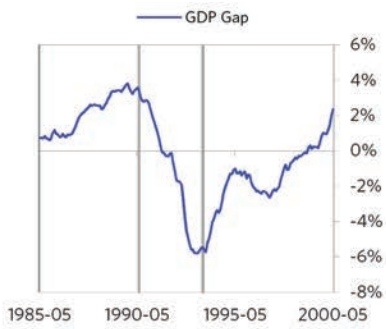


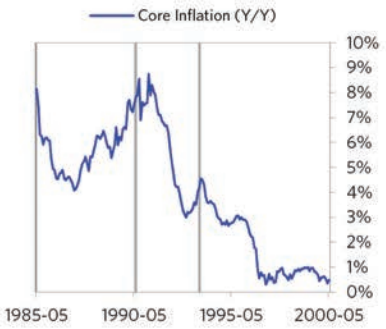


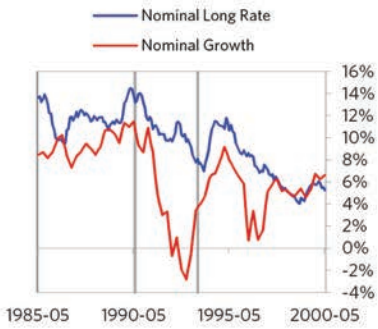
Monetary and Fiscal Policy



Economic Conditions

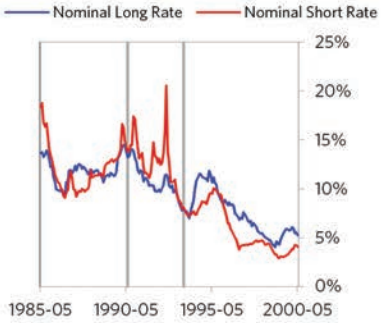


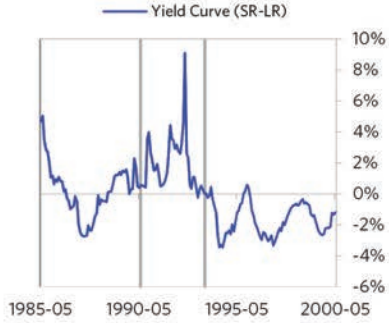


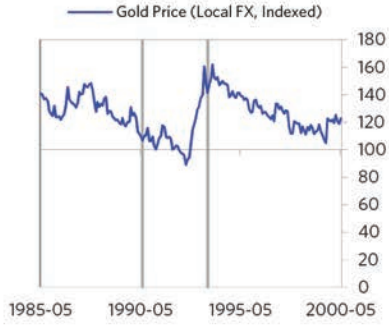


Sweden 1987–2000 Chart Deck Appendix (cont.)

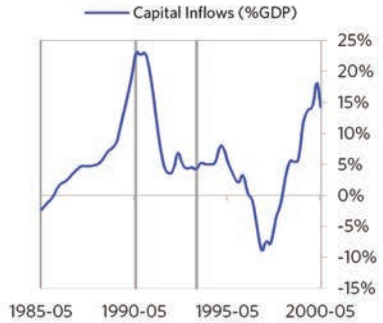
Markets

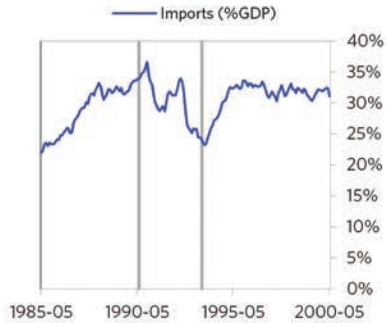


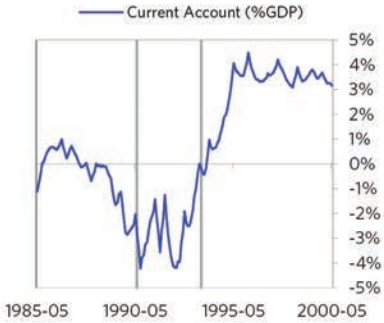


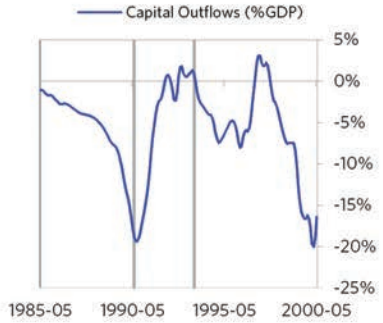


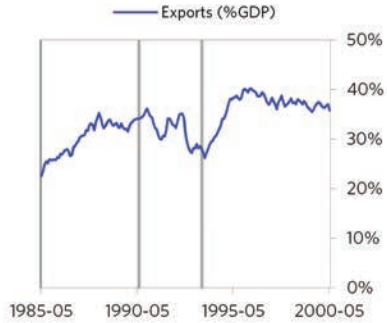
External Position











Japan 1987–2017 Case Auto-Summary

As shown in the charts to the right, Japan experienced a classic deflationary deleveraging cycle between 1987 and 2017.

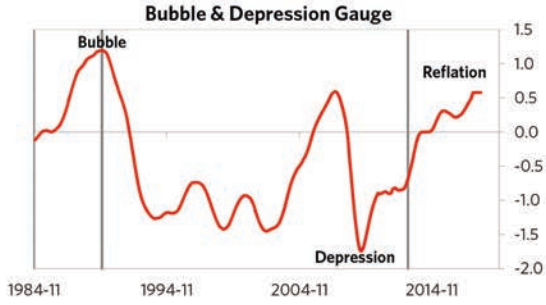
The Bubble Phase

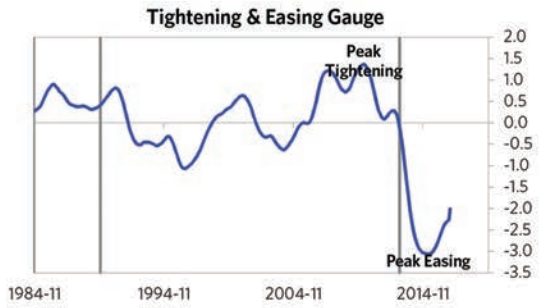
Between 1987 and 1989, Japan experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth and strong asset returns. Debts rose by 24% of GDP during the bubble to a pre-crisis peak of 307% of GDP. In this case, the debt was in Japan's domestic currency, the majority was owned domestically, and Japan was a net creditor (which helped keep the exchange rate strong even through shocks, due to capital repatriations). During the bubble phase, investment inflows were low, averaging around 1% of GDP. Aided by that rising debt, growth was strong (at 5%), while levels of economic activity were high (the GDP gap peaked at 4%). Furthermore, strong asset returns (equities averaged 28% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a large tightening (with short rates rising around 450 bps). Taken together, these bubble pressures, combined with tightening money and credit, created an unsustainable situation.

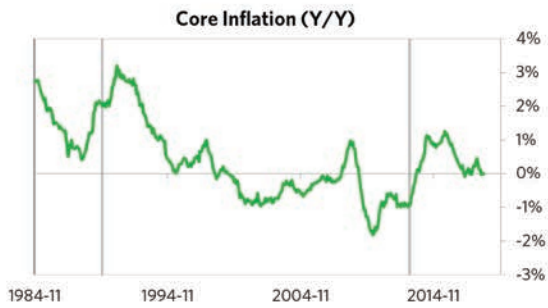
The Depression Phase

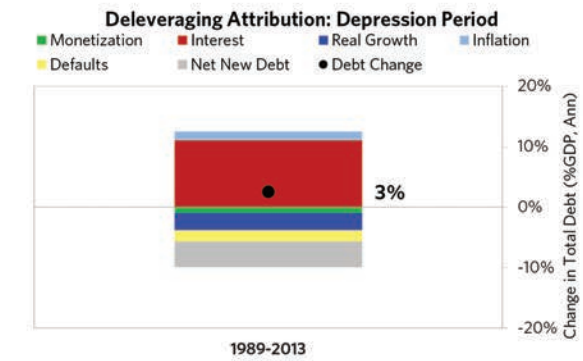
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 1989 to 2013. At its pre-crisis peak, debt service reached 78% of GDP, making Japan vulnerable to a shock—which came in the form of real estate and stock market busts. Japan suffered from self-reinforcing declines in stock prices (falling by 67%) and in home prices (falling by 43%). Unemployment rates increased by 3%. Japan's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Japan needed a deleveraging, its debt as a % GDP went up by 59% (3% annualized), driven primarily by interest payments financed with new debt.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







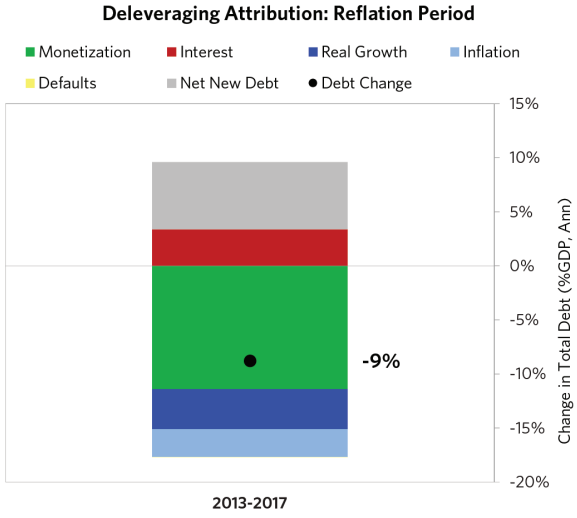


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Japan 1987–2017 Case Auto-Summary (cont.)

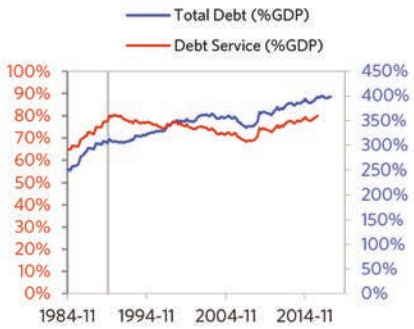
The Reflation Phase

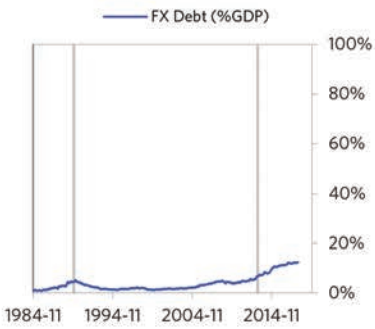
In this case, the resolution of the debt problems was very slow, as monetary policy was not sufficiently easy to push nominal GDP growth above nominal interest rates for quite some time. Eventually, however, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2013. In terms of monetary policy, M0 increased by 58% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -10% during the stimulative phase. Over the cycle, Japan was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 2% during this period and sovereign long rates falling to 0%). During this phase, unemployment rates were flat and debt as a % of GDP fell by 43% (9% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven primarily by monetization and to a lesser extent by rising real incomes.

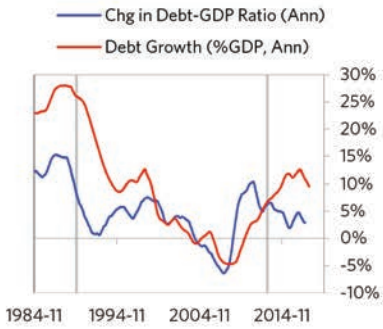


Japan 1987–2017 Chart Deck Appendix

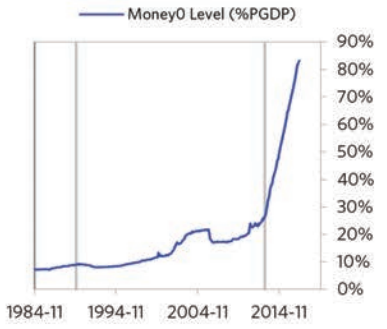
Indebtedness

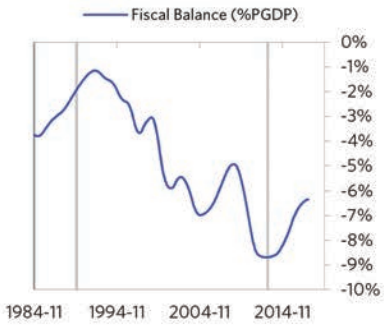




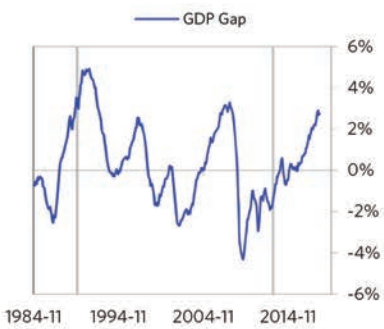


Monetary and Fiscal Policy



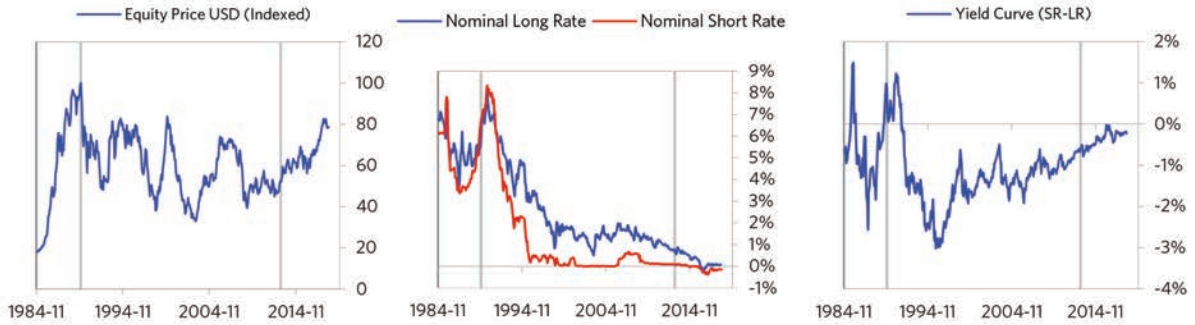


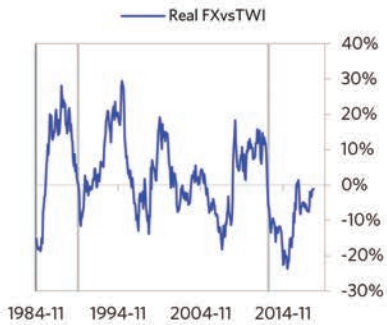
Economic Conditions



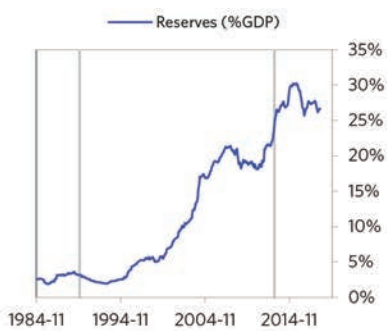
Japan 1987–2017 Chart Deck Appendix (cont.)

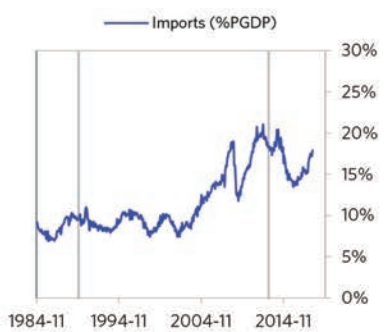
Markets

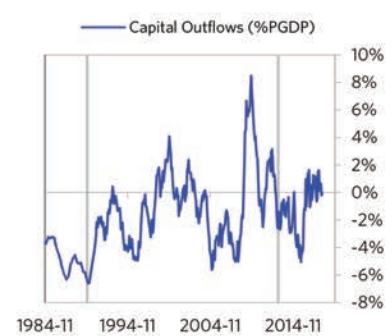




External Position







United States 2004–2014 Case Auto-Summary

As shown in the charts to the right, the United States experienced a classic deflationary deleveraging cycle between 2004 and 2014.

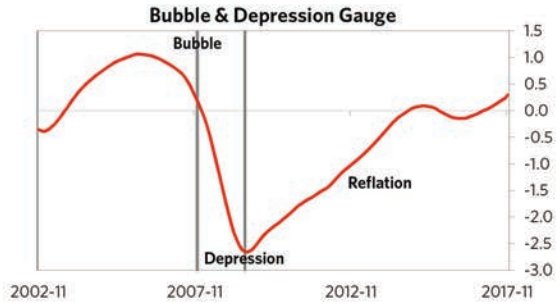
The Bubble Phase

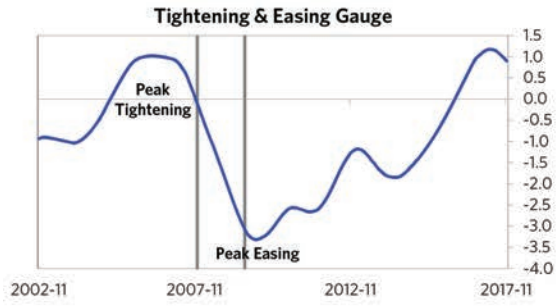
Between 2004 and 2007, the United States experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth and strong asset returns. Debts rose by 38% of GDP during the bubble to a pre-crisis peak of 349% of GDP. In this case, the debt was in the United States's domestic currency, and the majority was owned domestically, too. During the bubble phase, investment inflows were moderately strong, averaging around 8% of GDP, which helped to finance a current account deficit of 6% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 3%). Furthermore, strong asset returns (equities averaged 14% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a large tightening (with short rates rising around 400 bps). Taken together, these bubble pressures, combined with tightening money and credit, created an unsustainable situation.

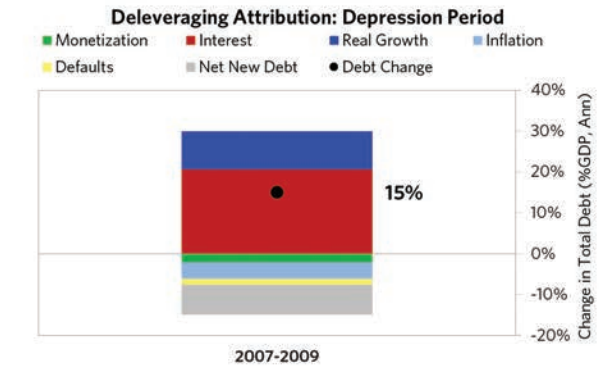
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2007 to 2009. At its pre-crisis peak, debt service reached 68% of GDP, making the United States vulnerable to a shock—which came in the form of a housing bust. The United States suffered from self-reinforcing declines in GDP (falling by 4%), in stock prices (falling by 50%) and in home prices (falling by 28%). Unemployment rates increased by 5%. The United States's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though the United States needed a deleveraging, its debt as a % GDP went up by 23% (15% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by falling real incomes.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





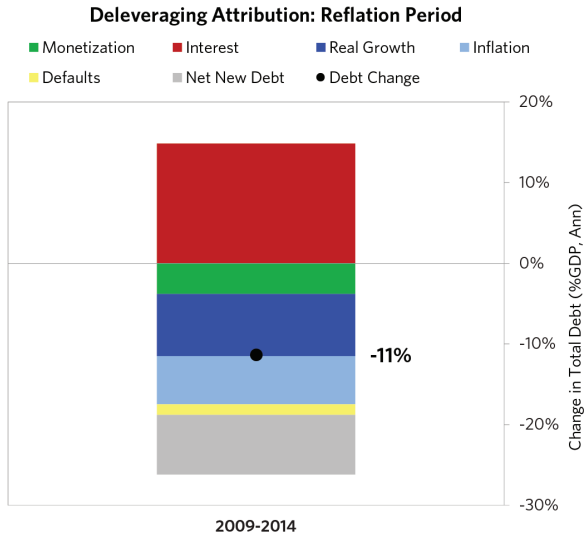


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United States 2004–2014 Case Auto-Summary (cont.)

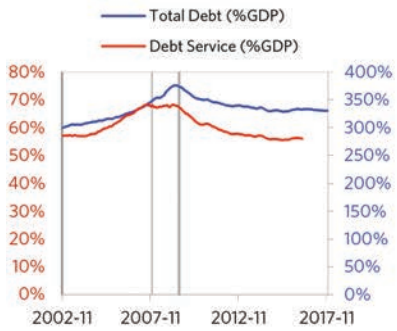
The Reflation Phase

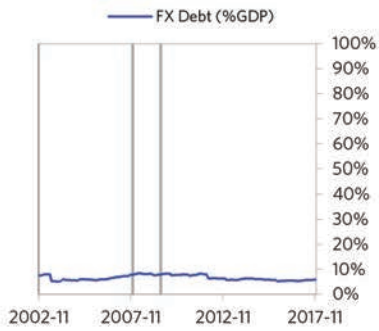
After a slightly shorter than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2009. In terms of monetary policy, M0 increased by 16% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -10% during the stimulative phase. Over the cycle, the United States was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it recapitalized banks, provided liquidity, and directly purchased troubled assets. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 3% during this period and sovereign long rates falling to 2%). During this phase, unemployment rates declined by 3% and debt as a % of GDP fell by 59% (11% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven by a mix of rising real incomes, inflation, and paying down existing debt. This was partially offset by interest payments financed with new debt. It took 4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 5 years.

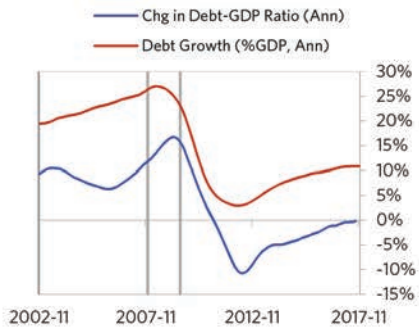


United States 2004–2014 Chart Deck Appendix

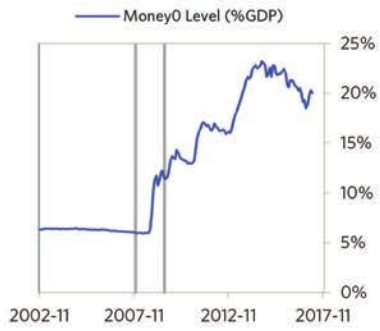
Indebtedness

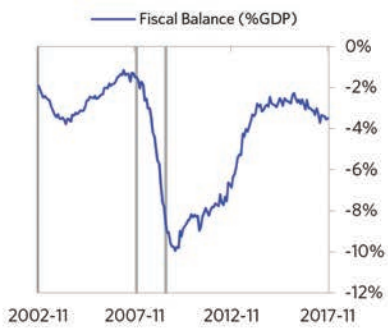




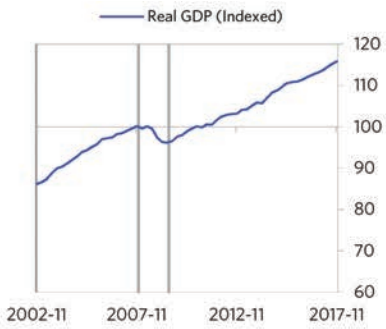


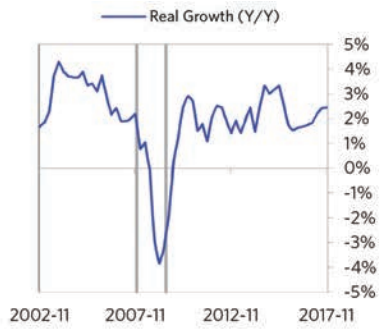
Monetary and Fiscal Policy

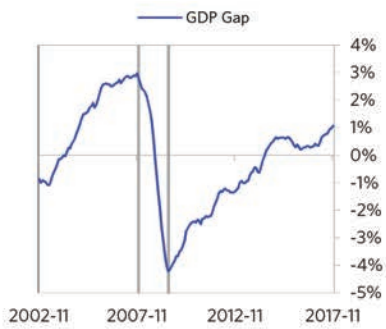


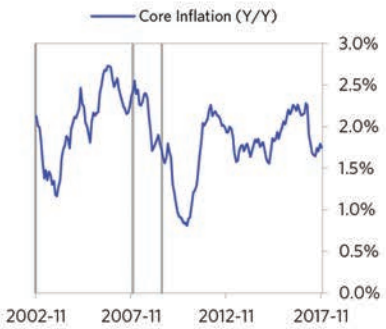


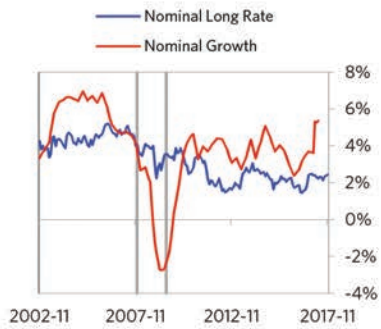
Economic Conditions





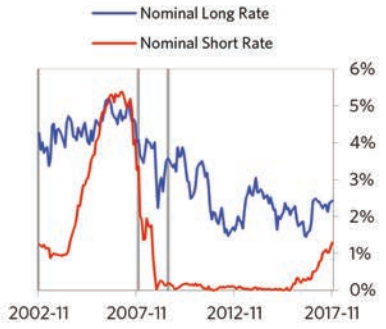


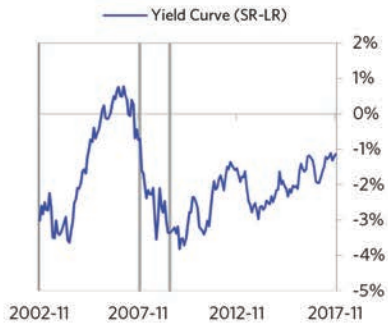


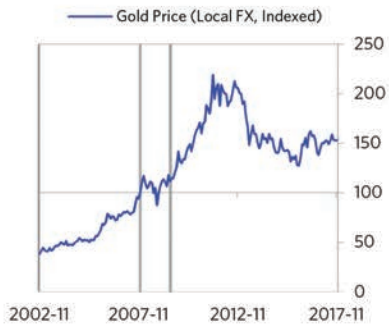


United States 2004–2014 Chart Deck Appendix (cont.)

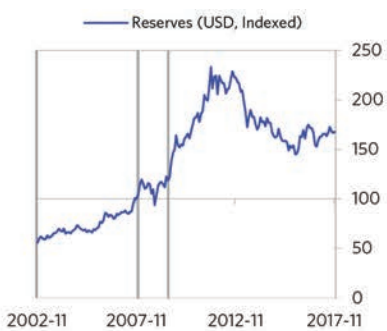
Markets

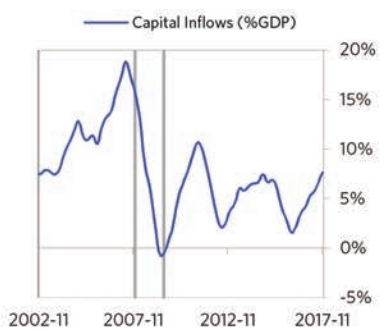


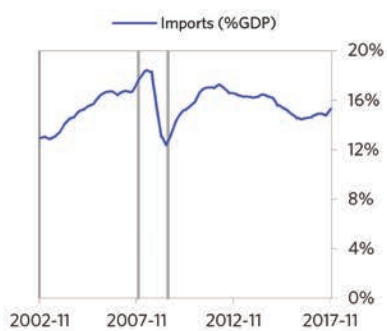


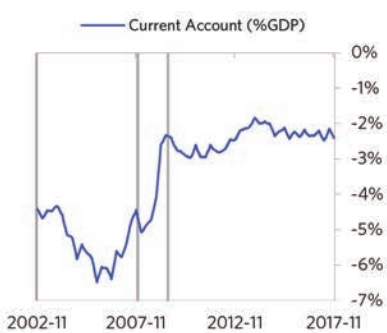


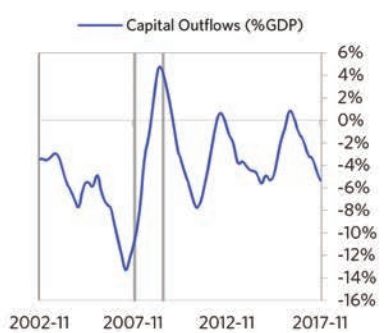
External Position

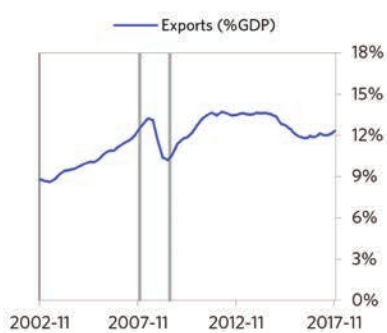












Austria 2005–2017 Case Auto-Summary

As shown in the charts to the right, Austria experienced a classic deflationary deleveraging cycle between 2005 and 2017.

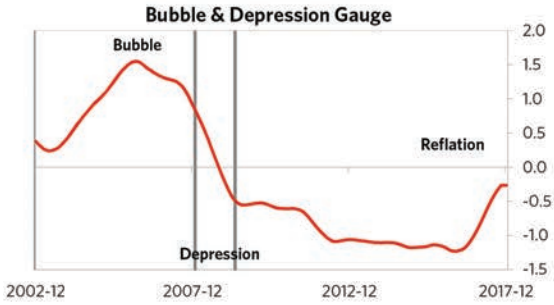
The Bubble Phase

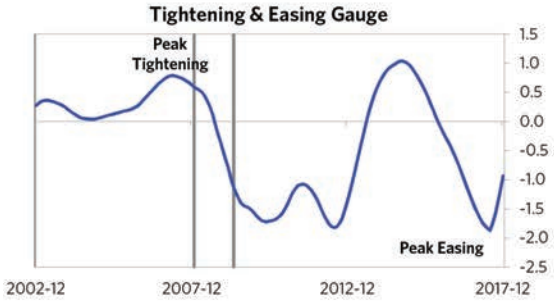
Between 2005 and 2008, Austria experienced a bubble that was most characterized by strong equity returns. Debts rose by 19% of GDP during the bubble to a pre-crisis peak of 279% of GDP. In this case, the debt was in Euros, which, while technically Austria's domestic currency, is not a currency that Austria had control over. In addition, a high share of debt was owned by foreigners, which left Austria with some exposure to a pullback in foreign capital. Aided by that capital, growth was strong (at 3%). Furthermore, strong asset returns (equities averaged 20% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 200 bps). Taken together, these bubble pressures and Austria's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

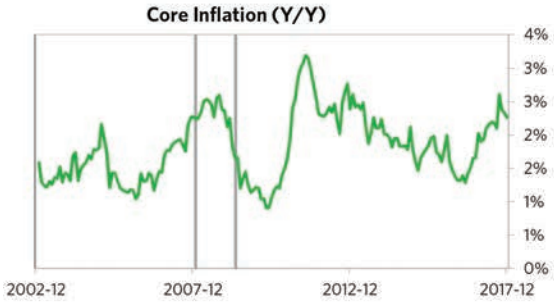
The Depression Phase

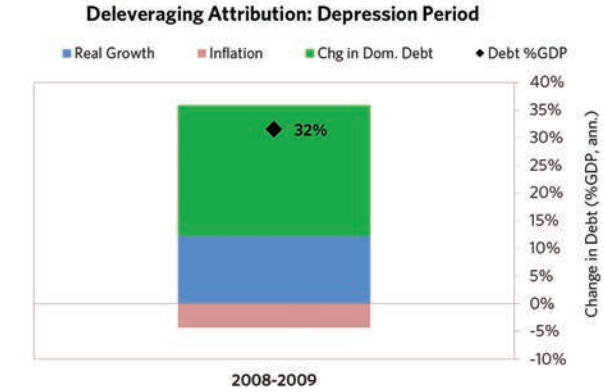
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2009. At its pre-crisis peak, debt service reached 69% of GDP, making Austria vulnerable to a shock—which came in the form of the 2008 global financial crisis. Austria suffered from self-reinforcing declines in GDP (falling by 4%), and in stock prices (falling by 66%). Austria's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Austria needed a deleveraging, its debt as a % GDP went up by 39% (32% annualized) as incomes declined.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







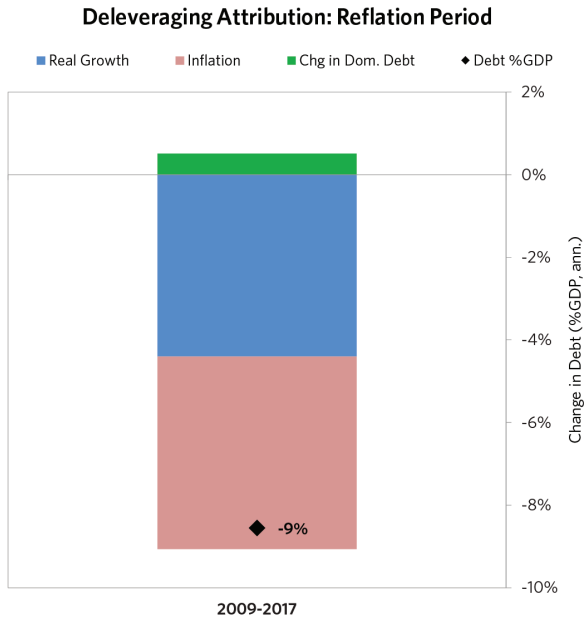


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Austria 2005–2017 Case Auto-Summary (cont.)

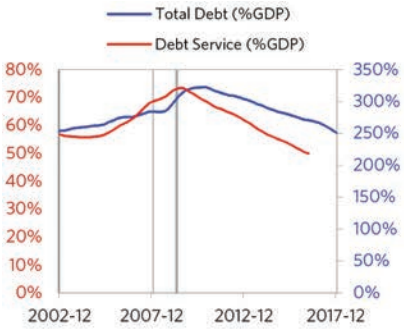
The Reflation Phase

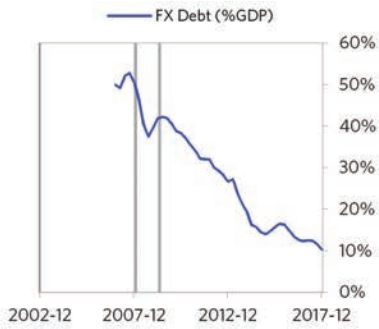
After a relatively short bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2009. In terms of monetary policy, M0 increased by 19% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -2% during the stimulative phase. Over the cycle, Austria was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 classic policy levers. In particular, it recapitalized banks and provided liquidity. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 3% during this period and sovereign long rates falling to 0%). During this phase, unemployment rates were flat and debt as a % of GDP fell by 74% (9% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher inflation. It took 3 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

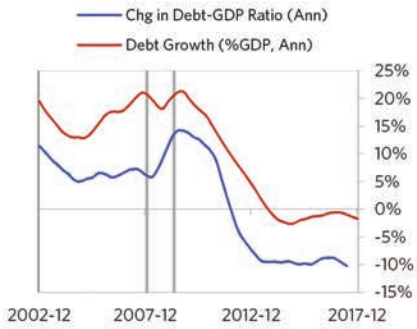


Austria 2005–2017 Chart Deck Appendix

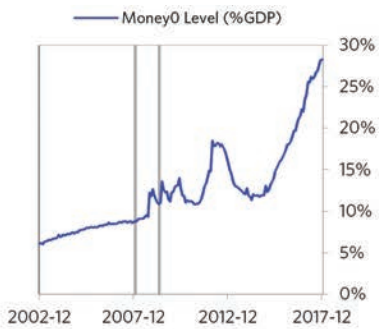
Indebtedness

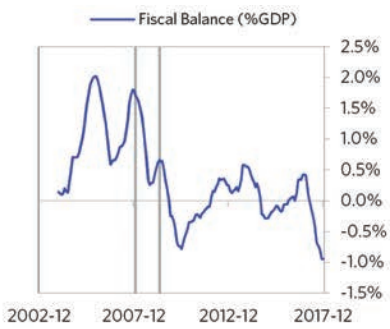




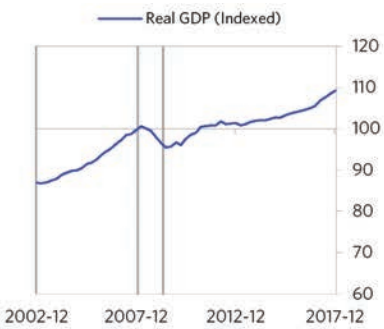


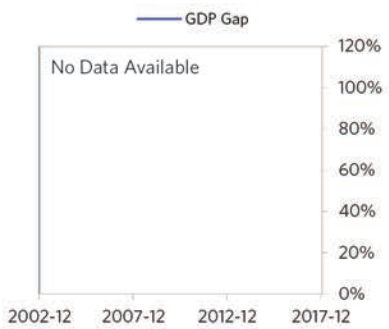
Monetary and Fiscal Policy

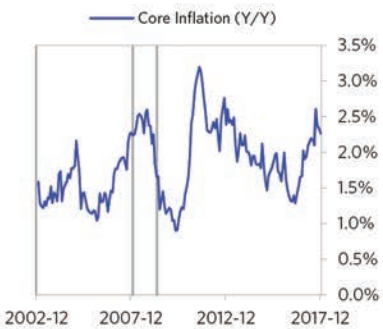


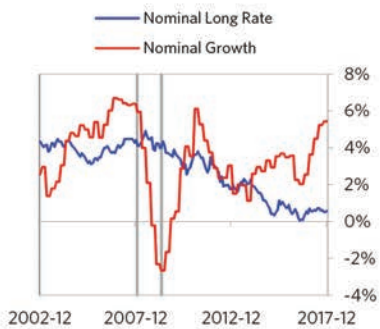


Economic Conditions



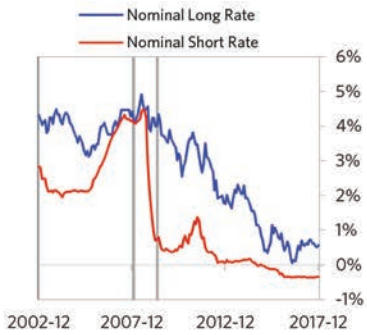


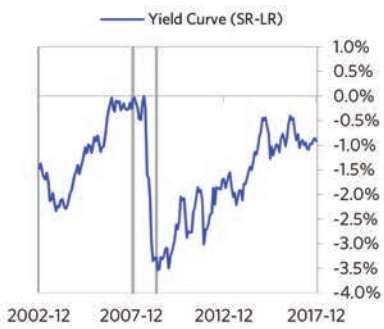


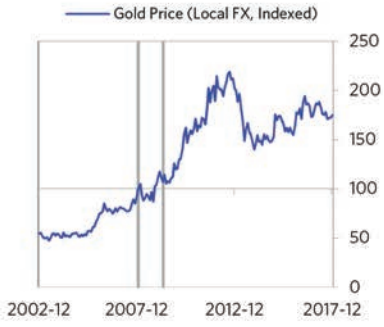


Austria 2005–2017 Chart Deck Appendix (cont.)

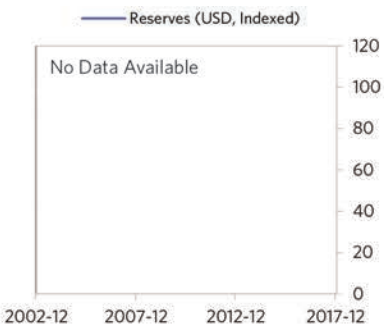
Markets

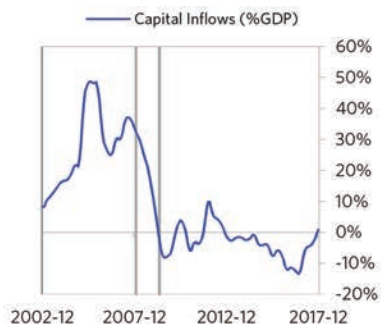


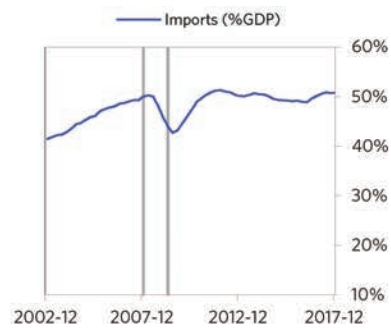


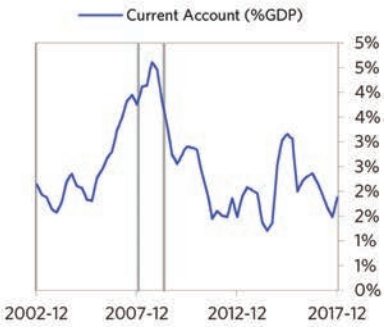


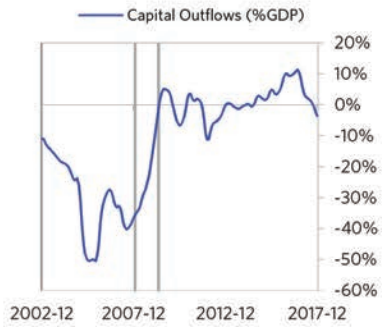
External Position

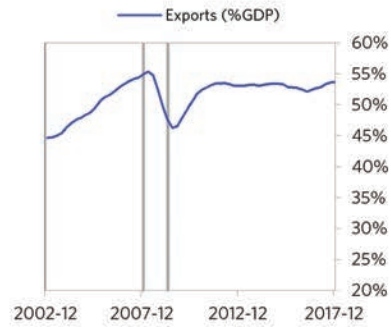












Germany 2006–2017 Case Auto-Summary

As shown in the charts to the right, Germany experienced a classic deflationary deleveraging cycle between 2006 and 2017.

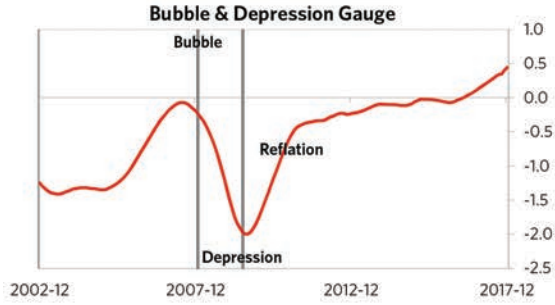
The Bubble Phase

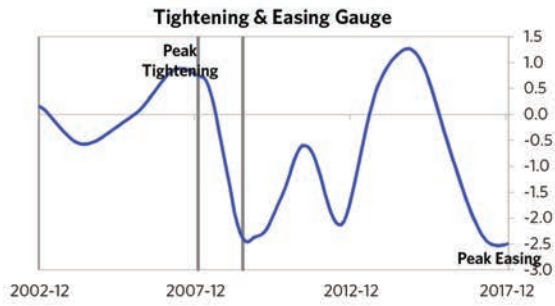
Unlike many other cases, Germany didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts reaching 261% of GDP prior to the crisis. In this case, the debt was in Euros, which, while technically Germany's domestic currency, is not a currency that Germany had control over. Most of the debt was owned domestically.

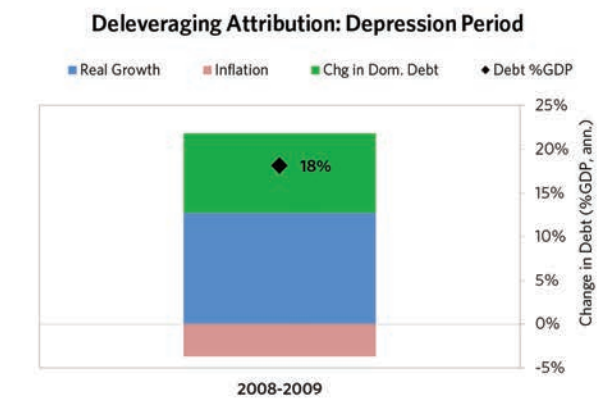
The Depression Phase

Eventually the cycle turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2009. At its pre-crisis peak, debt service reached 51% of GDP, making Germany vulnerable to a shock—which came in the form of the 2008 global financial crisis. Germany suffered from self-reinforcing declines in GDP (falling by 7%), and in stock prices (falling by 53%). Germany's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Germany needed a deleveraging, its debt as a % GDP went up by 26% (18% annualized) as incomes declined.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





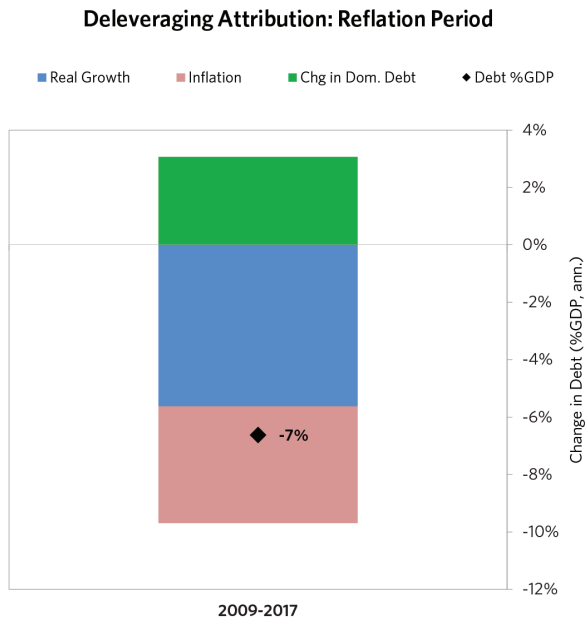


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Germany 2006–2017 Case Auto-Summary (cont.)

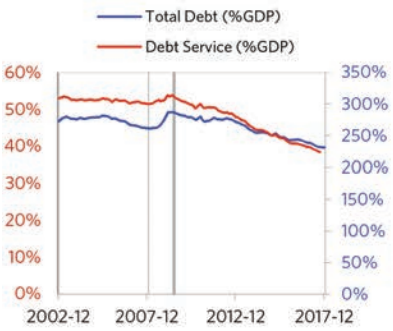
The Reflation Phase

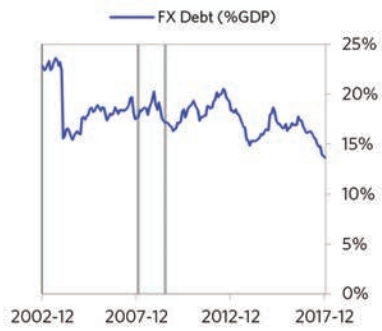
After a slightly shorter than average bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2009. In terms of monetary policy, M0 increased by 14% of GDP, interest rates were ultimately pushed down to -1%, and real FX averaged -4% during the stimulative phase. Over the cycle, Germany was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 3% during this period and sovereign long rates falling to 0%). During this phase, unemployment rates declined by 4% and debt as a % of GDP fell by 56% (7% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 3 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

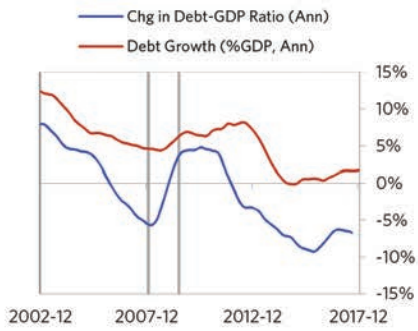


Germany 2006–2017 Chart Deck Appendix

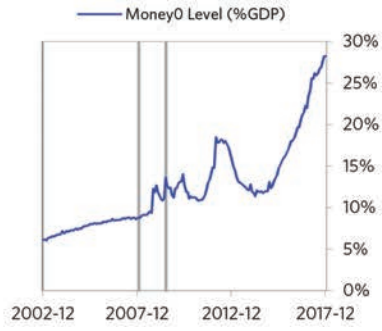
Indebtedness

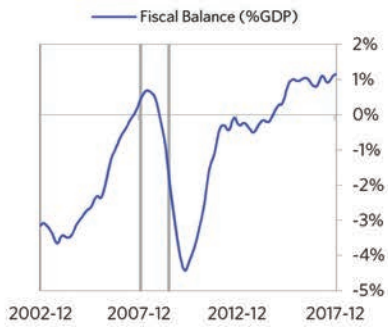




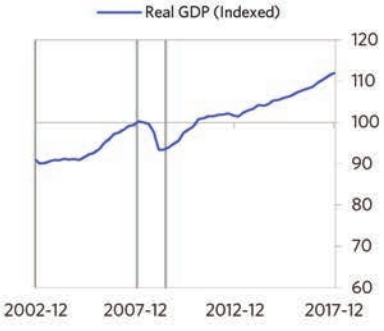


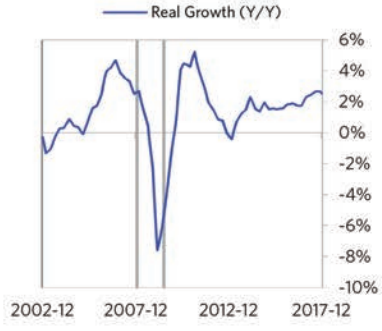
Monetary and Fiscal Policy

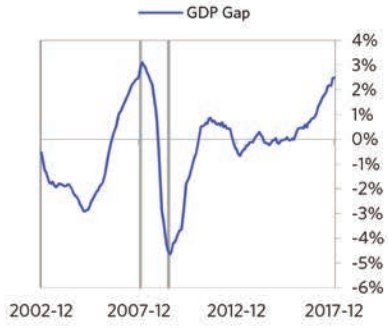


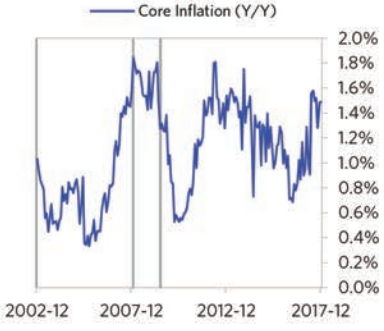


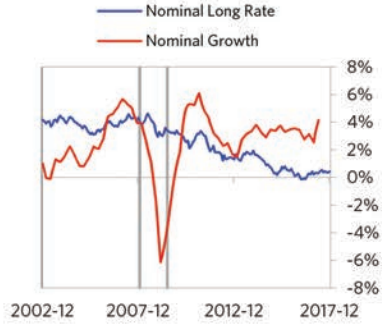
Economic Conditions

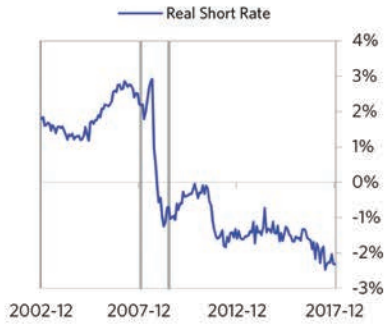






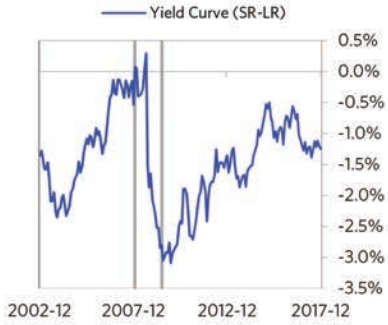


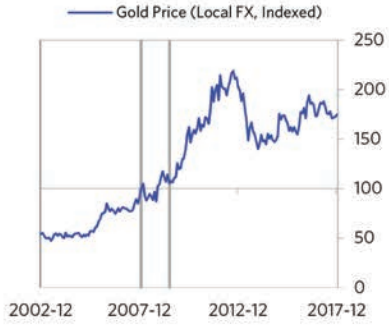




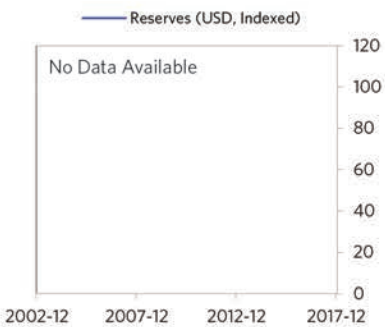
Germany 2006–2017 Chart Deck Appendix (cont.)

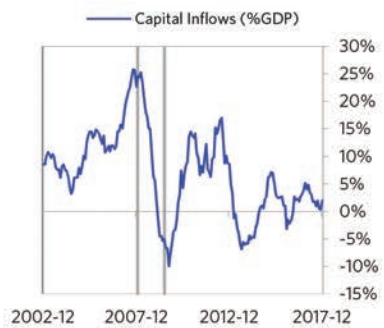
Markets

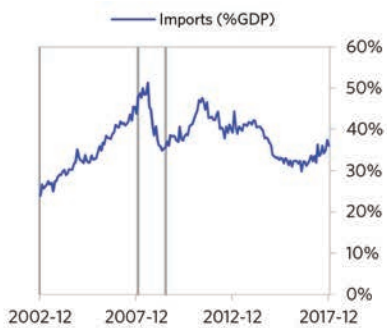


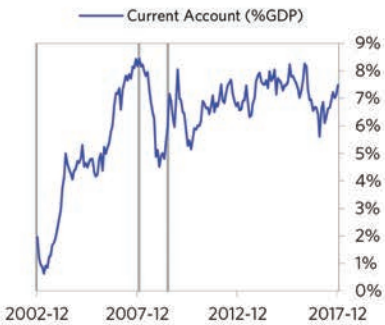


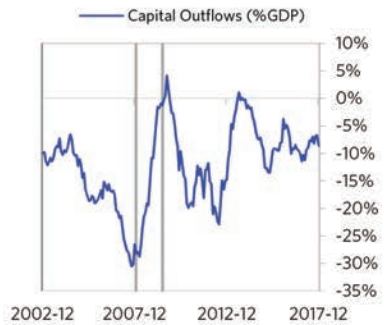
External Position

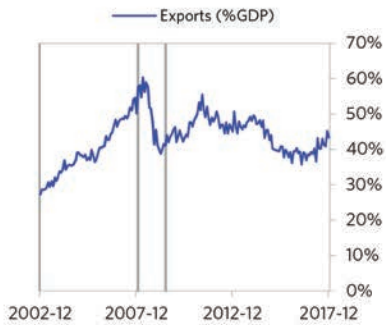












Greece 2005–2018 Case Auto-Summary

As shown in the charts to the right, Greece experienced a classic deflationary deleveraging cycle starting in 2005.

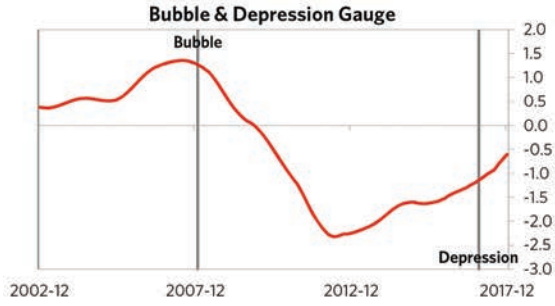
The Bubble Phase

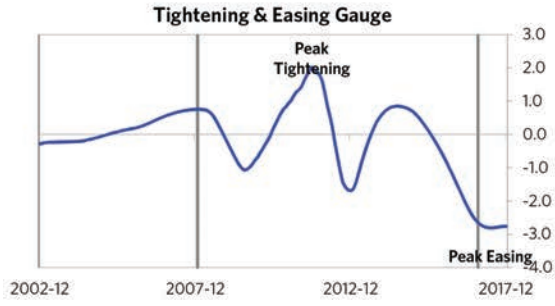
Between 2005 and 2008, Greece experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth and strong asset returns. Debts rose by 40% of GDP during the bubble to a pre-crisis peak of 206% of GDP. In this case, the debt was in Euros, which, while technically Greece's domestic currency, is not a currency that Greece had control over. In addition, a high share of debt was owned by foreigners, which left Greece with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 22% of GDP, which helped to finance a current account deficit of 13% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 10%). Furthermore, strong asset returns (equities averaged 19% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 200 bps). Taken together, these bubble pressures and Greece's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

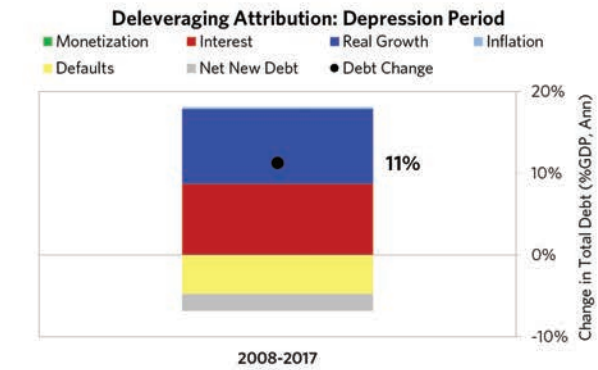
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2017. At its pre-crisis peak, debt service reached 42% of GDP, making Greece vulnerable to a shock—which came in the form of the 2008 global financial crisis. Greece suffered a fall in foreign funding (with capital inflows falling by 34% of GDP), leading to a tightening (short rates increased by 86%) - which in turn led to self-reinforcing declines in GDP (falling by 27%), in stock prices (falling by 91%) and in home prices (falling by 42%). Unemployment rates increased by 15%. Greece's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Greece needed a deleveraging, its debt as a % GDP went up by 101% (11% annualized), driven primarily by falling real incomes and to a lesser extent by interest payments financed with new debt.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







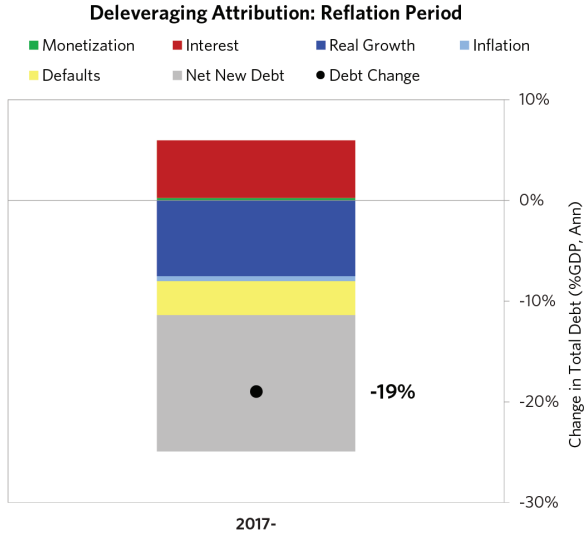
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Greece 2005–2018 Case Auto-Summary (cont.)

The Reflation Phase

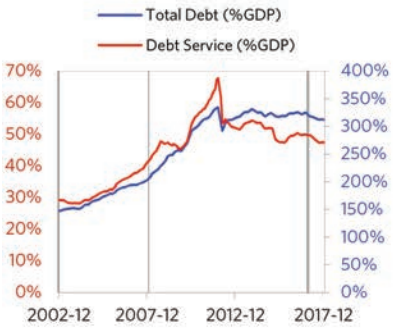
So far, Greece hasn't transitioned into much of a "beautiful" phase, as the nominal growth rate was never pushed above nominal interest rates by adequate monetary easing.

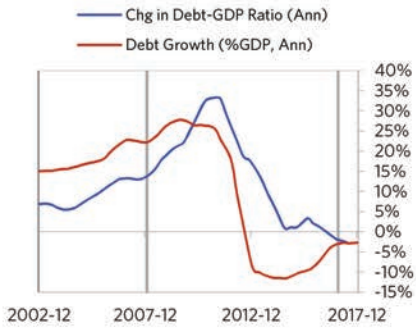
The crisis had a notable impact on the politics of Greece, as it helped set the stage for Alexis Tsipras, whom many people consider a populist leader, to take power.



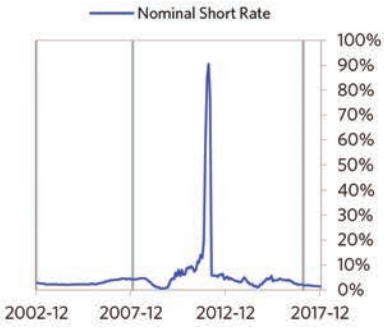
Greece 2005–2018 Chart Deck Appendix

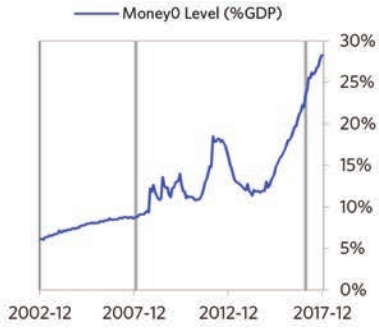
Indebtedness

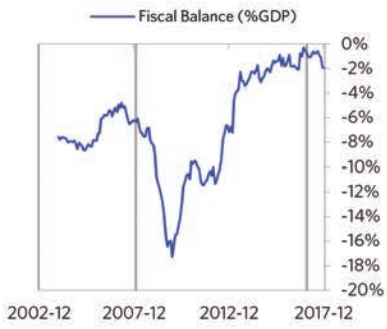




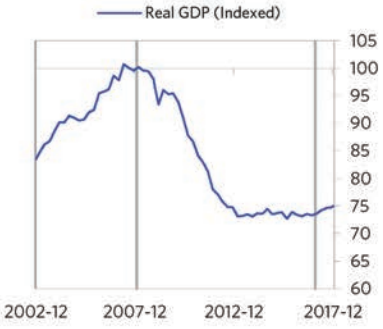
Monetary and Fiscal Policy

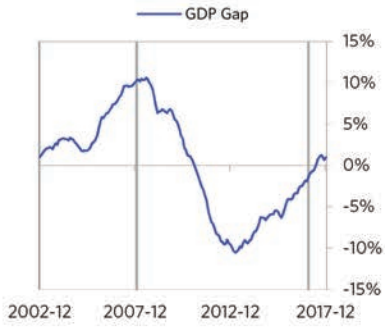


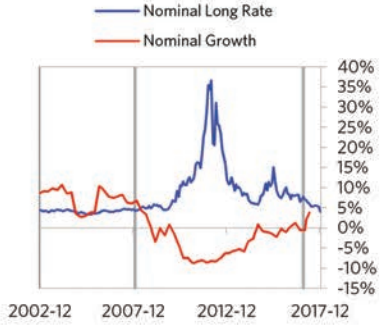




Economic Conditions

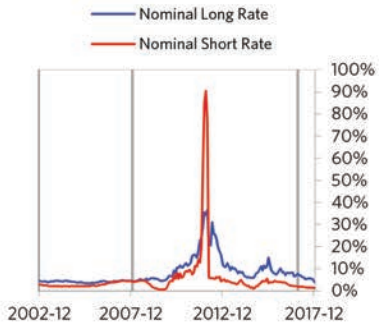


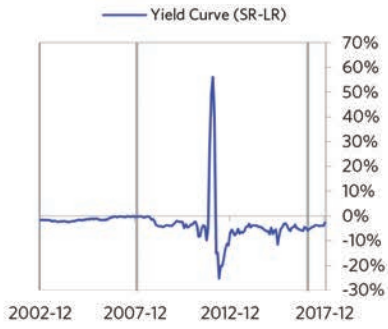


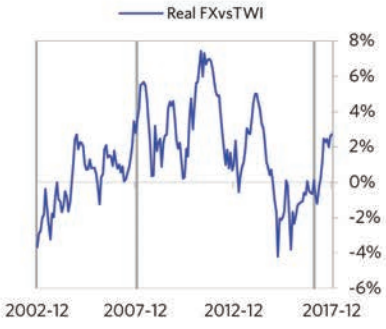


Greece 2005–2018 Chart Deck Appendix (cont.)

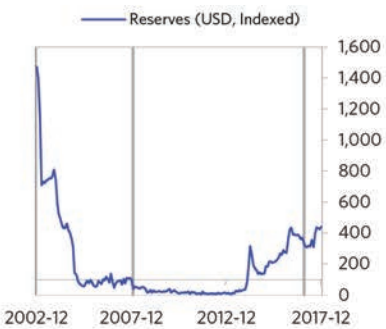
Markets

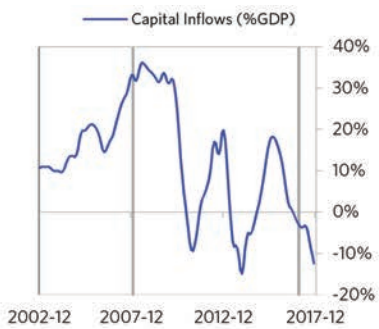


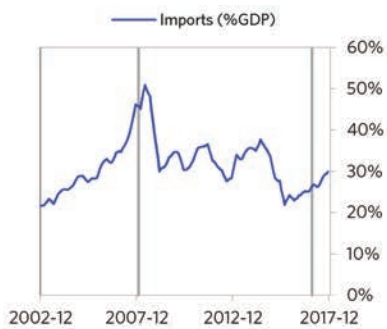


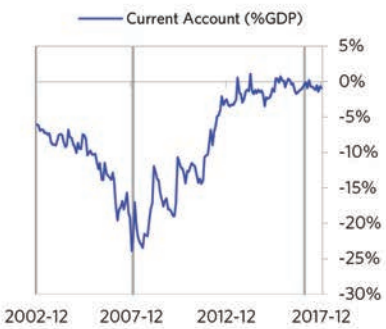


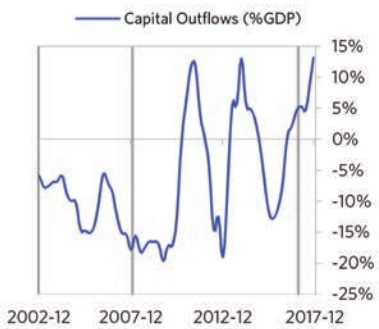
External Position

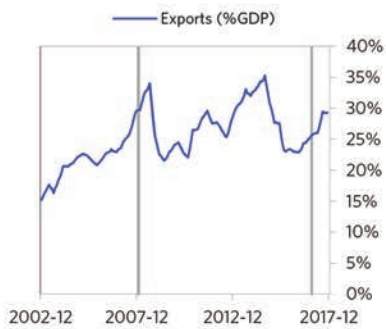












Hungary 2005–2017 Case Auto-Summary

As shown in the charts to the right, Hungary experienced a classic deflationary deleveraging cycle between 2005 and 2017.

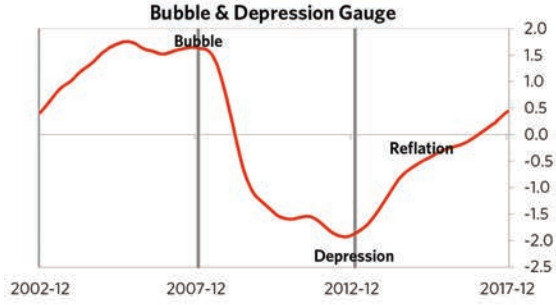
The Bubble Phase

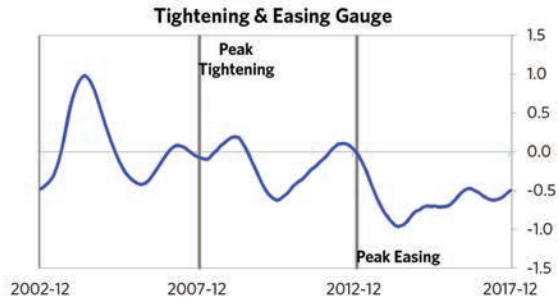
Between 2005 and 2008, Hungary experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 45% of GDP during the bubble to a pre-crisis peak of 214% of GDP. In this case, the debt was in Hungary's domestic currency, though a high share was owned by foreigners, which left Hungary with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were moderately strong, averaging around 6% of GDP, which helped to finance a current account deficit of 8% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 5%). Furthermore, strong asset returns (equities averaged 14% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Hungary's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

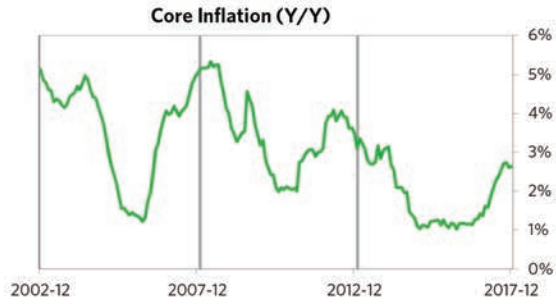
The Depression Phase

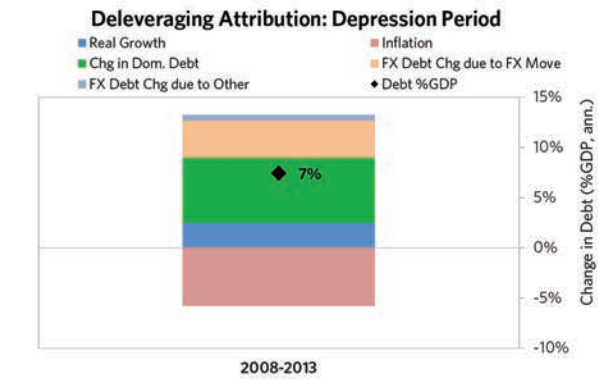
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2013. At its pre-crisis peak, debt service reached 31% of GDP, making Hungary vulnerable to a shock—which came in the form of the 2008 global financial crisis. Hungary suffered a fall in foreign funding (with portfolio inflows falling by 12% of GDP), leading to a tightening (policy makers hiked short rates by 5%)—which in turn led to self-reinforcing declines in GDP (falling by 7%), in stock prices (falling by 73%) and in home prices (falling by 16%). Unemployment rates increased by 3%. Hungary's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Hungary needed a deleveraging, its debt as a % GDP went up by 37% (7% annualized) as incomes declined and as the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP during the ugly period).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







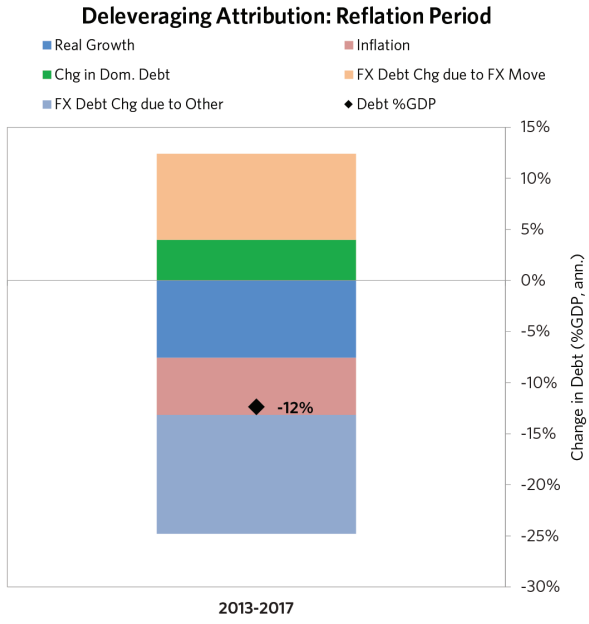


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Hungary 2005–2017 Case Auto-Summary (cont.)

The Reflation Phase

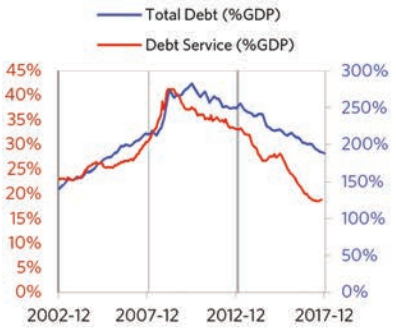
After a relatively long bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2013. In terms of monetary policy, M0 increased by 4% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -6% during the stimulative phase. Over the cycle, Hungary was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. It also benefited from an IMF assistance program. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 5% during this period and sovereign long rates falling to 2%). During this phase, unemployment rates declined by 7% and debt as a % of GDP fell by 51% (12% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 6 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

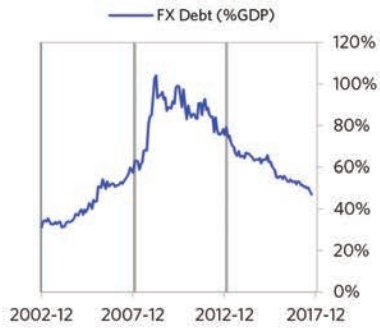


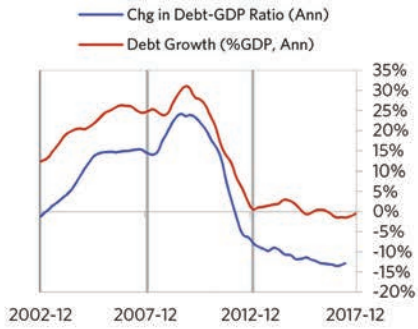
The crisis had a notable impact on the politics of Hungary, as it helped set the stage for Viktor Orban, whom many people consider a populist leader, to take power.

Hungary 2005–2017 Chart Deck Appendix

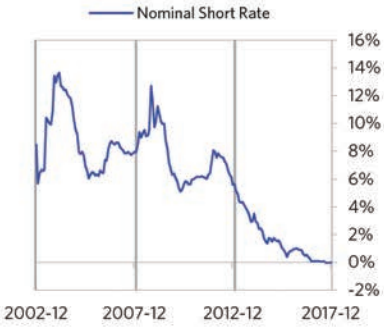
Indebtedness

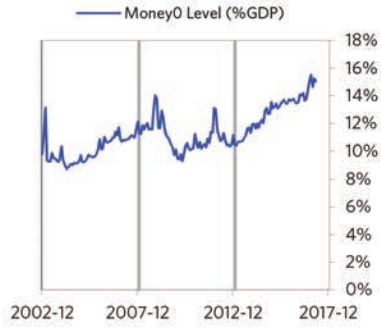


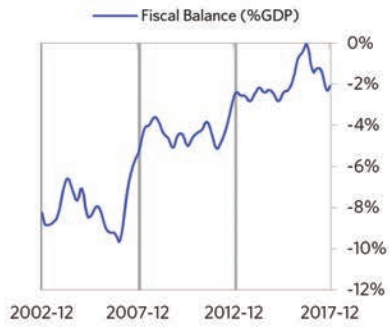




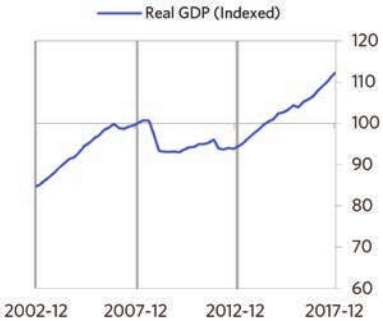
Monetary and Fiscal Policy

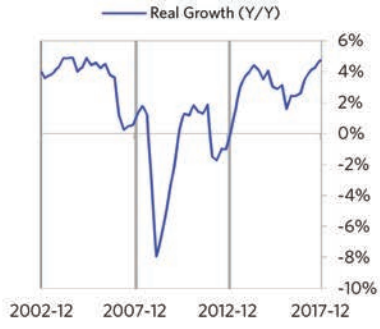


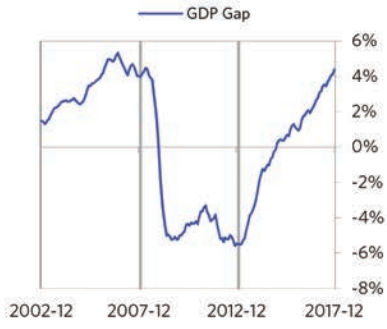


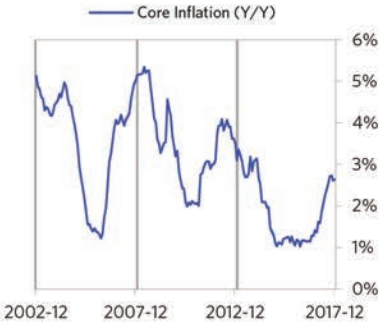


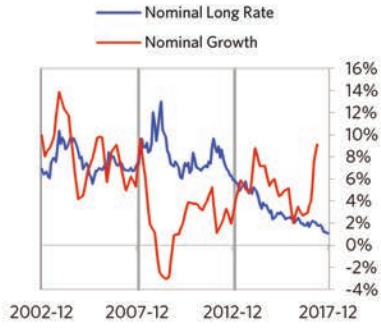
Economic Conditions

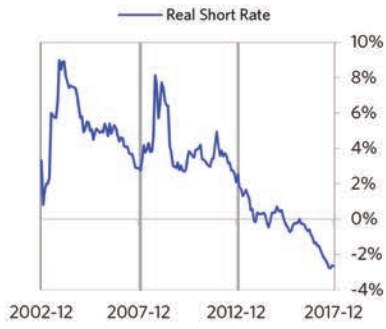






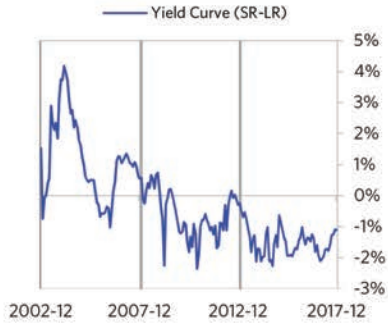


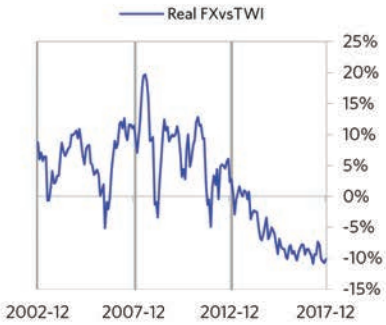


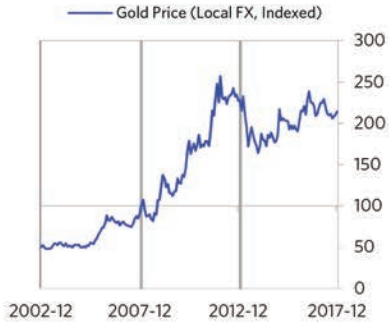


Hungary 2005–2017 Chart Deck Appendix (cont.)

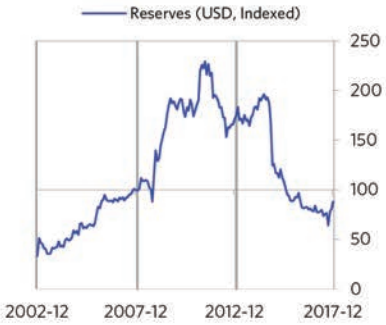
Markets

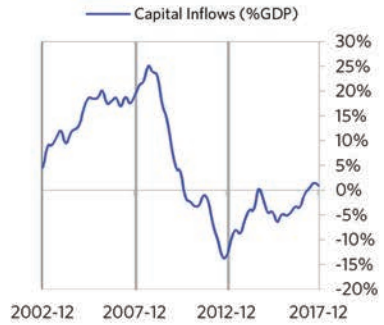


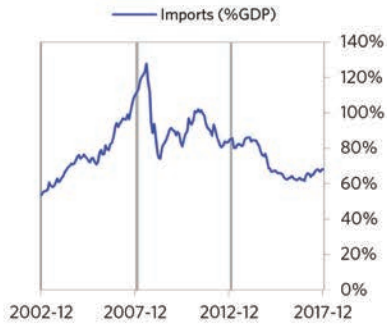


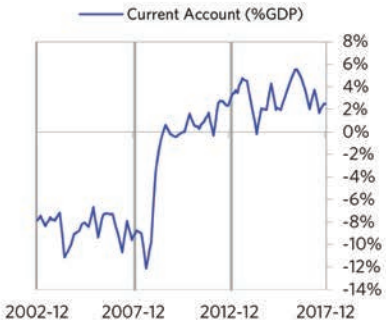


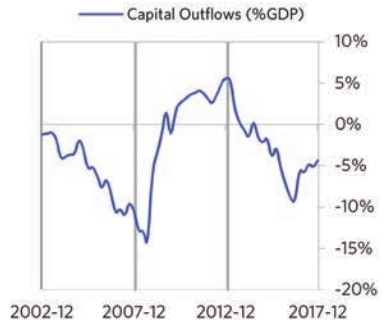
External Position

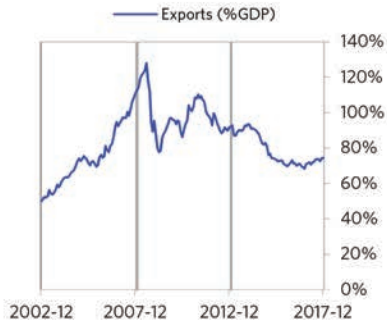












Ireland 2005–2017 Case Auto-Summary

As shown in the charts to the right, Ireland experienced a classic deflationary deleveraging cycle between 2005 and 2017.

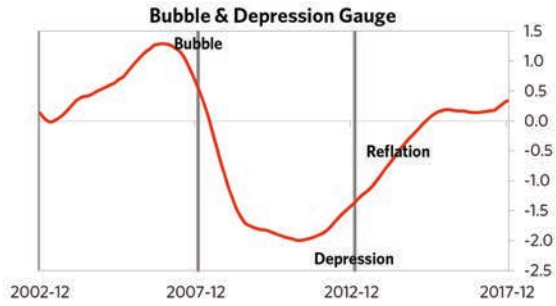
The Bubble Phase

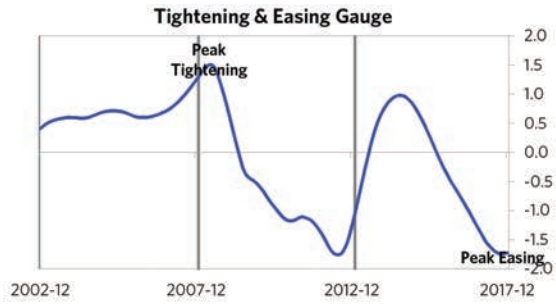
Between 2005 and 2008, Ireland experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth, and strong housing returns. Debts rose by 94% of GDP during the bubble to a pre-crisis peak of 271% of GDP. In this case, the debt was in Euros, which, while technically Ireland's domestic currency, is not a currency that Ireland had control over. In addition, a high share of debt was owned by foreigners, which left Ireland with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 95% of GDP, which helped to finance a current account deficit of 5% of GDP. Aided by that rising debt and capital, growth was strong (at 5%), while levels of economic activity were high (the GDP gap peaked at 8%). Furthermore, moderate asset returns (equities averaged 5% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 220 bps). Competitiveness became an issue, as Ireland's real FX peaked at +17%. Taken together, these bubble pressures and Ireland's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

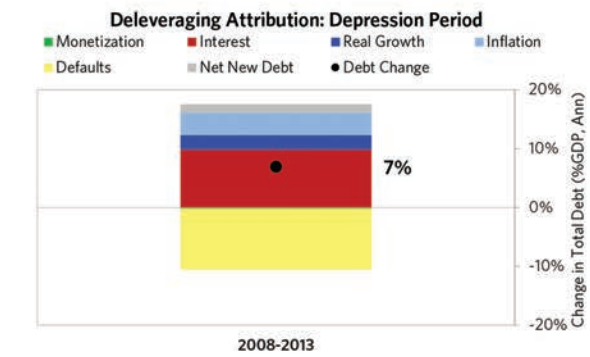
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2013. At its pre-crisis peak, debt service reached 77% of GDP, making Ireland vulnerable to a shock—which came in the form of the European debt crisis. Ireland suffered from self-reinforcing declines in GDP (falling by 9%), in stock prices (falling by 73%) and in home prices (falling by 53%). Unemployment rates increased by 9%. Ireland's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Ireland needed a deleveraging, its debt as a % GDP went up by 35% (7% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by deflation. This was partially offset by defaults.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





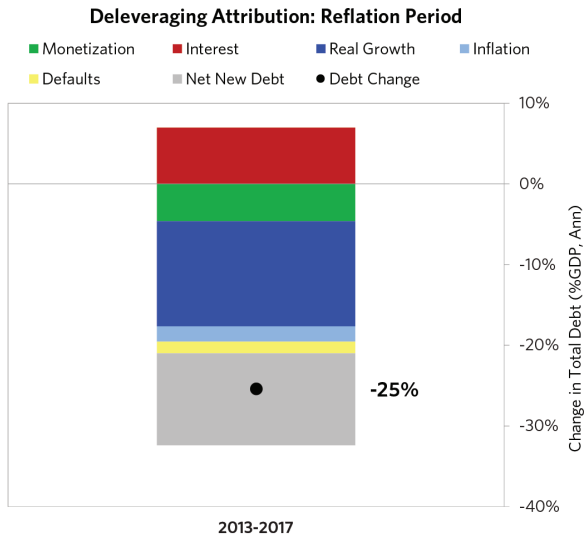


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Ireland 2005–2017 Case Auto-Summary (cont.)

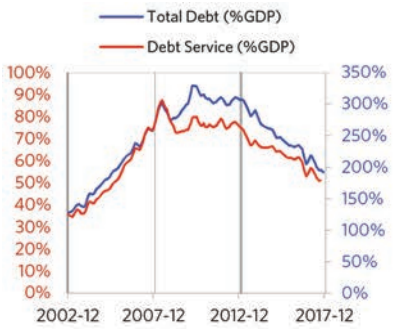
The Reflation Phase

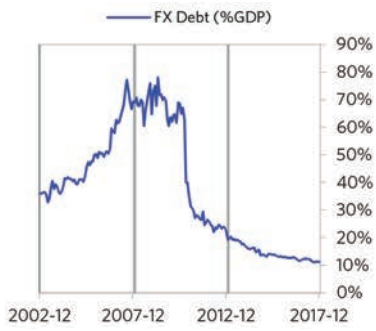
After a relatively long bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2013. In terms of monetary policy, M0 increased by 14% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -19% during the stimulative phase. Over the cycle, Ireland was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 6% during this period and sovereign long rates falling to 0%). During this phase, unemployment rates declined by 8% and debt as a % of GDP fell by 116% (25% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven by a mix of rising real incomes and paying down existing debt. It took 6 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

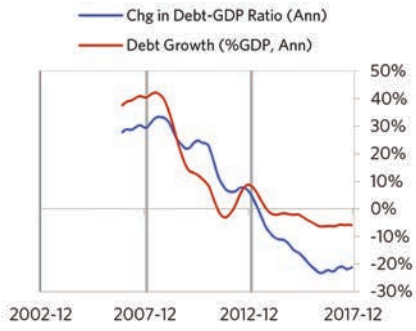


Ireland 2005–2017 Chart Deck Appendix

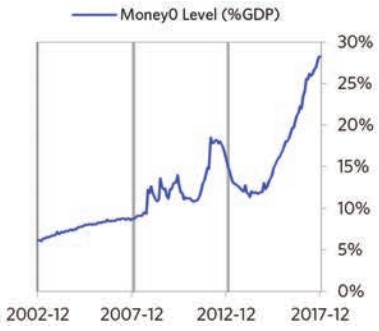
Indebtedness

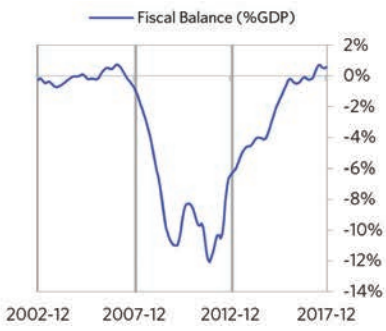




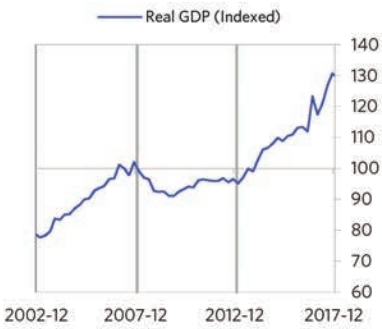


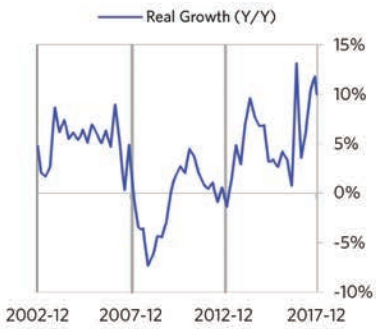
Monetary and Fiscal Policy

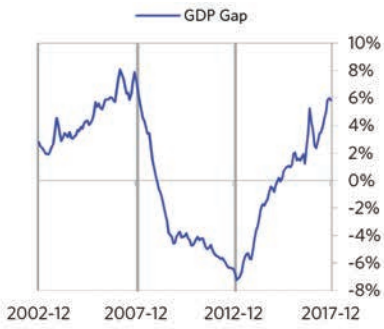


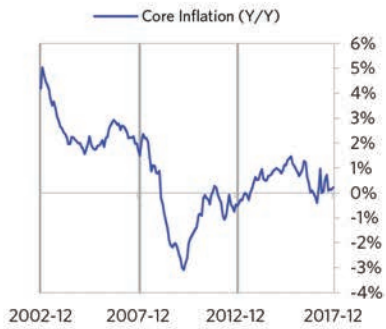


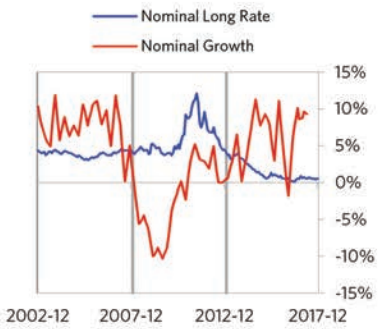
Economic Conditions





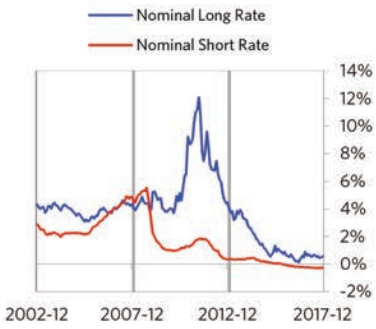


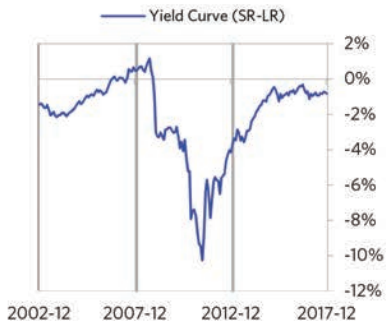


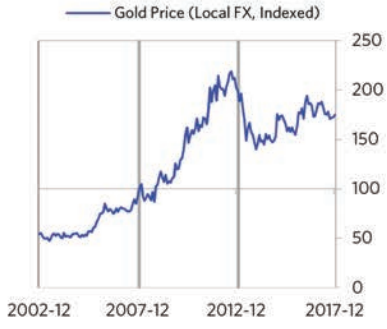


Ireland 2005–2017 Chart Deck Appendix (cont.)

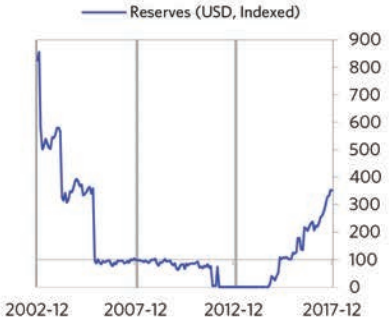
Markets

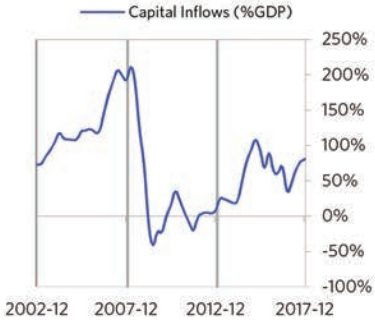


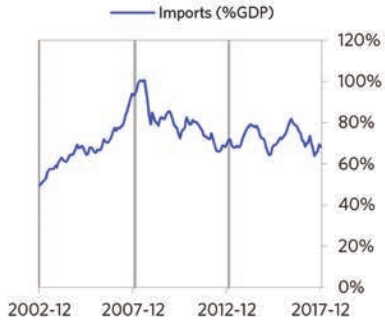


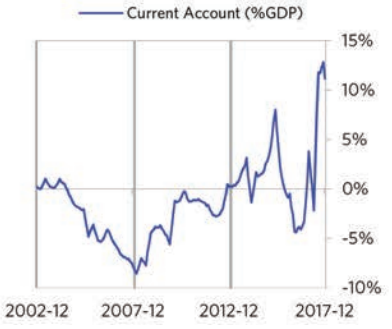


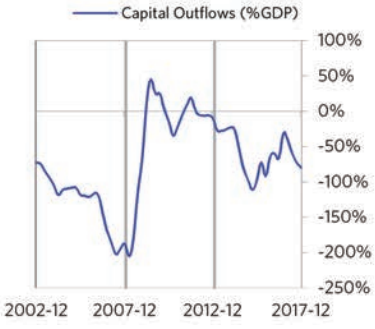
External Position

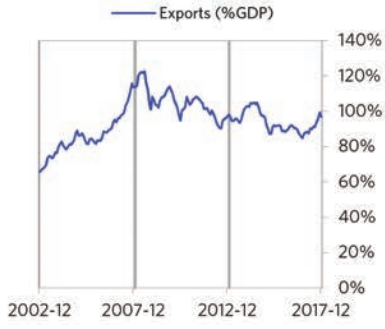












Italy 2005–2017 Case Auto-Summary

As shown in the charts to the right, Italy experienced a classic deflationary deleveraging cycle between 2005 and 2017.

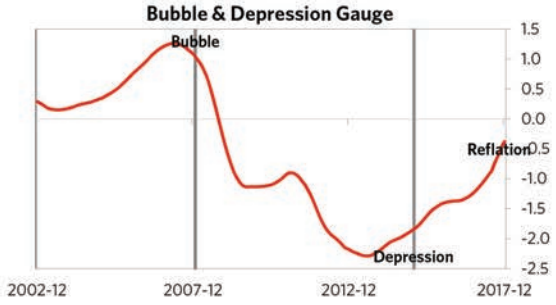
The Bubble Phase

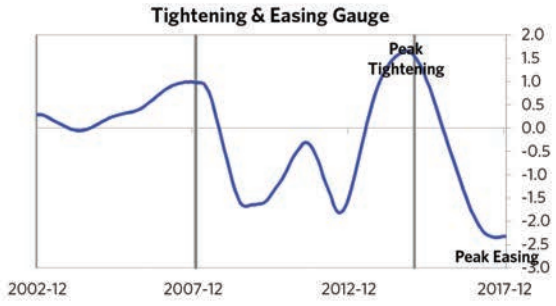
Between 2005 and 2008, Italy experienced a bubble that was driven by a self-reinforcing cycle of rising debt and strong growth. Debts rose by 29% of GDP during the bubble to a pre-crisis peak of 270% of GDP. In this case, the debt was in Euros, which, while technically Italy's domestic currency, is not a currency that Italy had control over. In addition, a high share of debt was owned by foreigners, which left Italy with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were moderately strong, averaging around 7% of GDP, which helped to finance a current account deficit of 1% of GDP. Aided by that rising debt and capital, growth was moderate (at 2%), while levels of economic activity were high (the GDP gap peaked at 4%). Furthermore, strong asset returns (equities averaged 7% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 200 bps). Taken together, these bubble pressures and Italy's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

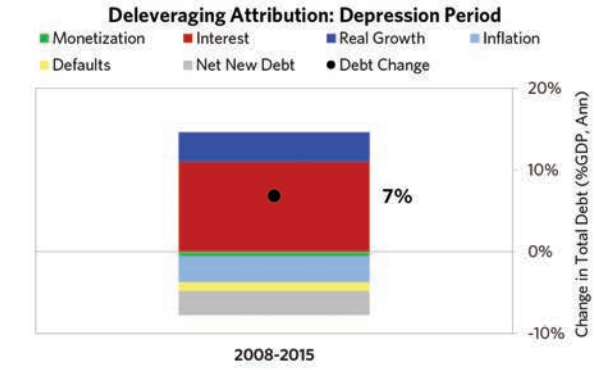
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2015. At its pre-crisis peak, debt service reached 58% of GDP, making Italy vulnerable to a shock—which came in the form of the European debt crisis. Italy suffered a fall in foreign funding (with portfolio inflows falling by 14% of GDP)—which in turn led to self-reinforcing declines in GDP (falling by 9%), in stock prices (falling by 67%) and in home prices (falling by 15%). Unemployment rates increased by 6%. Italy's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Italy needed a deleveraging, its debt as a % GDP went up by 48% (7% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by falling real incomes.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







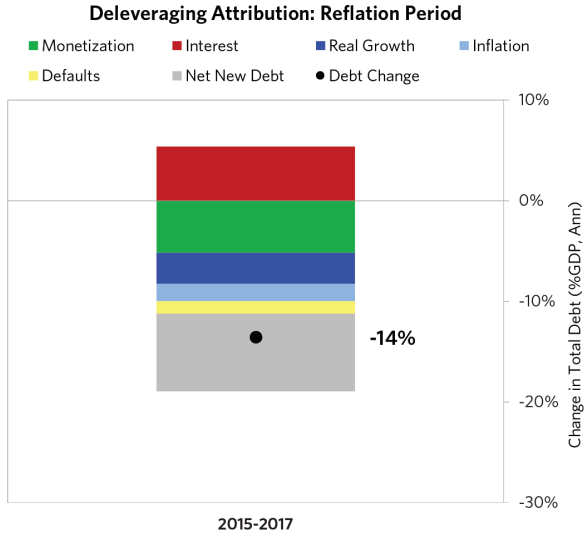
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Italy 2005–2017 Case Auto-Summary (cont.)

The Reflation Phase

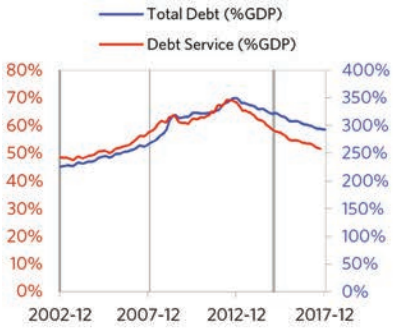
After a relatively long bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2015. In terms of monetary policy, M0 increased by 16% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -1% during the stimulative phase. Over the cycle, Italy was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. It also enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth above nominal interest rates (with growth averaging 1.8% during this period and sovereign long rates falling to 1.2%). During this phase, unemployment rates declined by 1% and debt as a % of GDP fell by 36% (14% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven by a mix of monetization and paying down existing debt. Real GDP has not yet reached its prior peak and equity prices in USD terms haven't yet fully recovered.

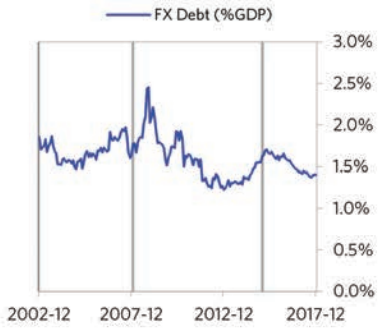
The crisis had a notable impact on the politics of Italy, as it helped set the stage for Giuseppe Conte, whom many people consider a populist leader, to take power in 2018.

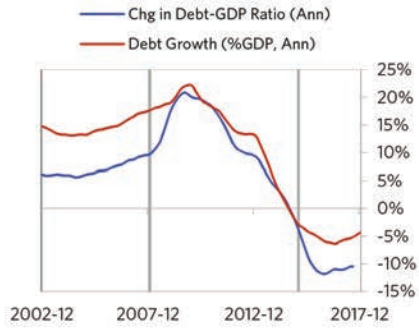


Italy 2005–2017 Chart Deck Appendix

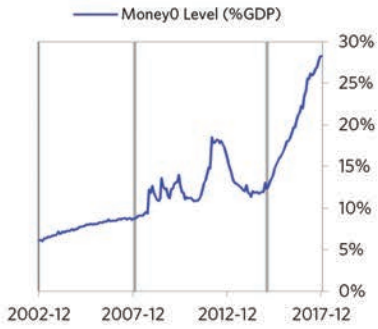
Indebtedness

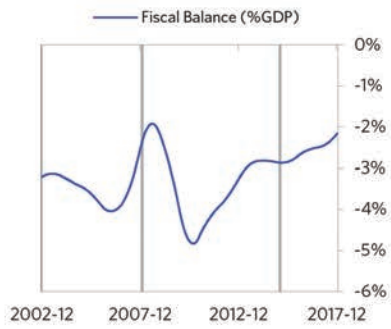




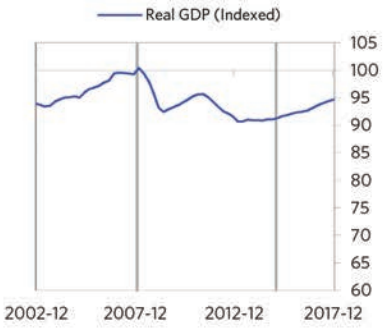


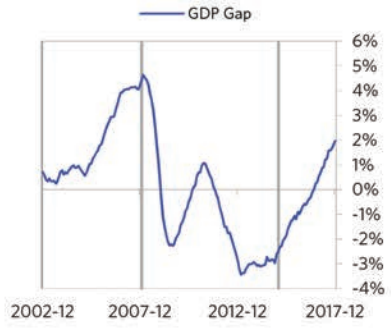
Monetary and Fiscal Policy

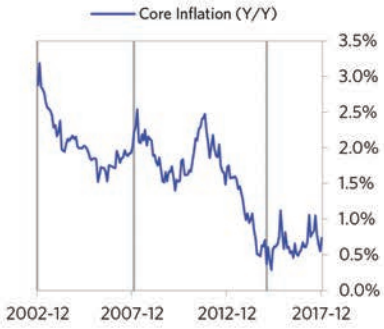


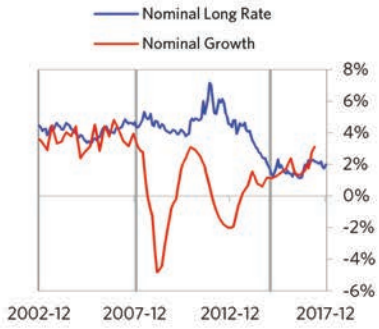


Economic Conditions



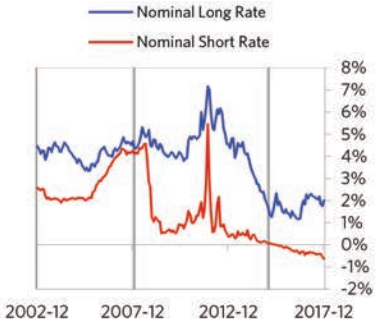


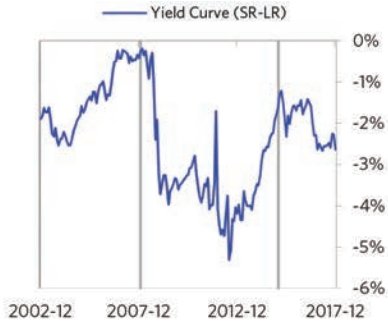


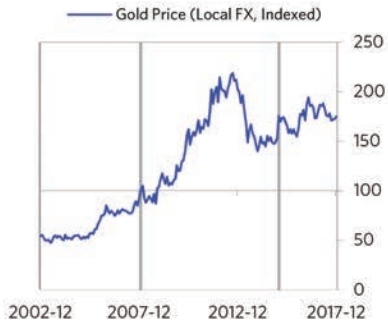


Italy 2005–2017 Chart Deck Appendix (cont.)

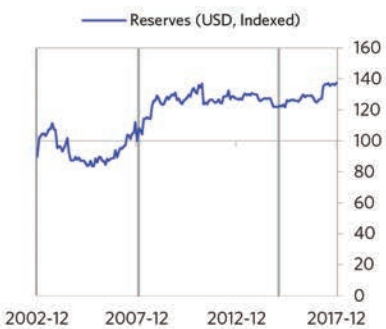
Markets

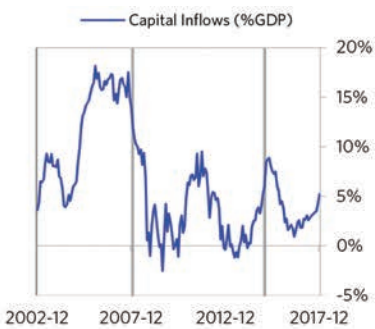


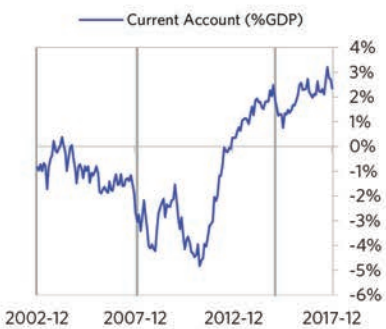


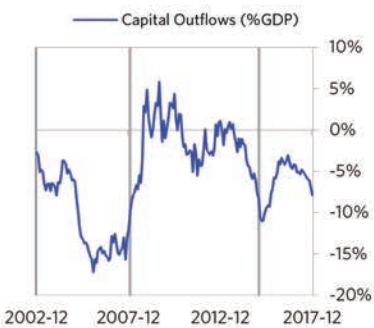


External Position









Netherlands 2006–2017 Case Auto-Summary

As shown in the charts to the right, the Netherlands experienced a classic deflationary deleveraging cycle between 2006 and 2017.

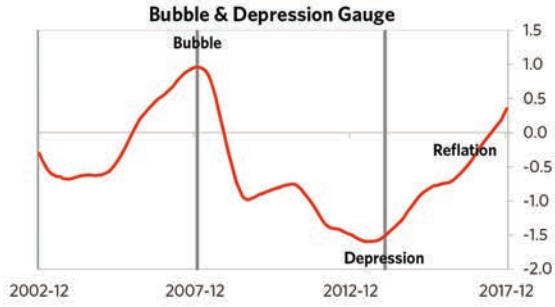
The Bubble Phase

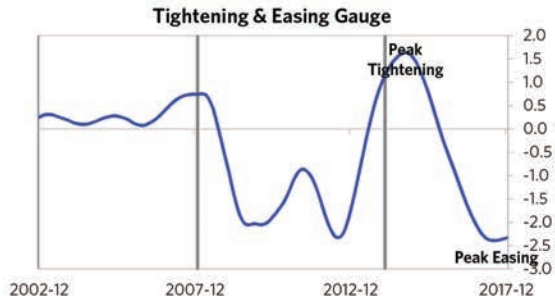
Between 2006 and 2008, the Netherlands experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 10% of GDP during the bubble to a pre-crisis peak of 355% of GDP. In this case, the debt was in Euros, which, while technically the Netherlands's domestic currency, is not a currency that the Netherlands had control over. In addition, a high share of debt was owned by foreigners, which left the Netherlands with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 14% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 5%). Furthermore, strong asset returns (equities averaged 11% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 200 bps). Taken together, these bubble pressures and the Netherlands's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

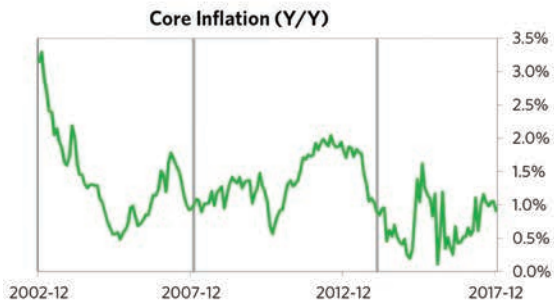
The Depression Phase

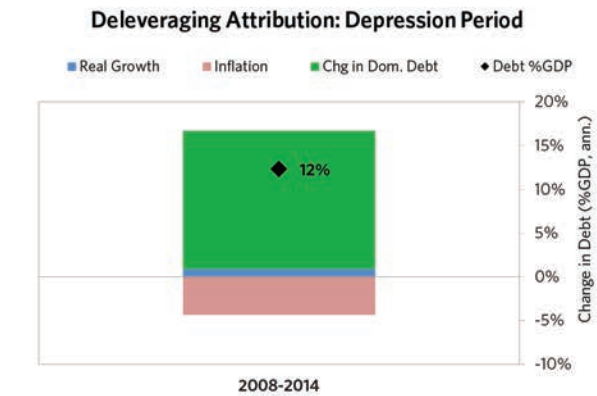
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2014. At its pre-crisis peak, debt service reached 68% of GDP, making the Netherlands vulnerable to a shock—which came in the form of the 2008 global financial crisis. The Netherlands suffered from self-reinforcing declines in GDP (falling by 4%), in stock prices (falling by 57%) and in home prices (falling by 20%). Unemployment rates increased by 4%. The Netherlands's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though the Netherlands needed a deleveraging, its debt as a % GDP went up by 74% (12% annualized) as incomes declined.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







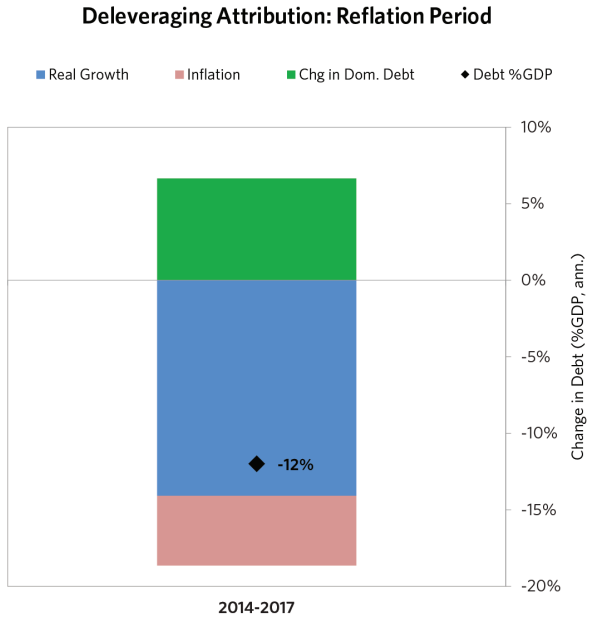


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Netherlands 2006–2017 Case Auto-Summary (cont.)

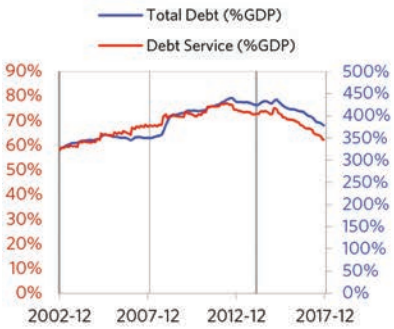
The Reflation Phase

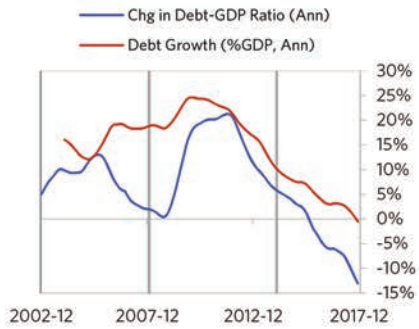
After a relatively long bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2014. In terms of monetary policy, M0 increased by 16% of GDP, interest rates were ultimately pushed down to -1%, and real FX averaged -2% during the stimulative phase. Over the cycle, the Netherlands was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 3% during this period and sovereign long rates falling to 0%). During this phase, unemployment rates declined by 3% and debt as a % of GDP fell by 46% (12% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher real growth. It took 7 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.



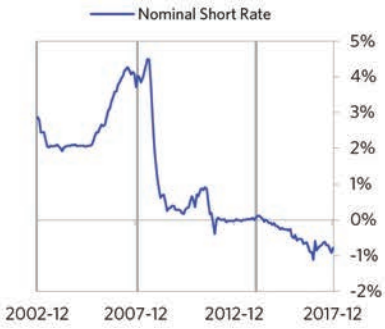
Netherlands 2006–2017 Chart Deck Appendix

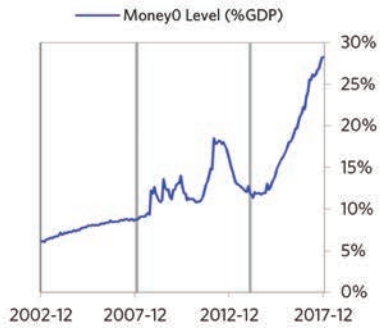
Indebtedness

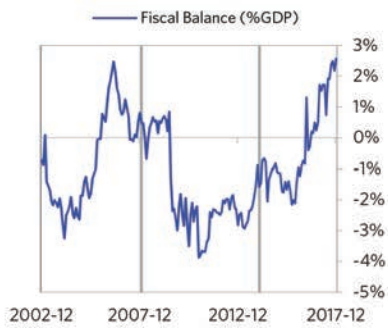




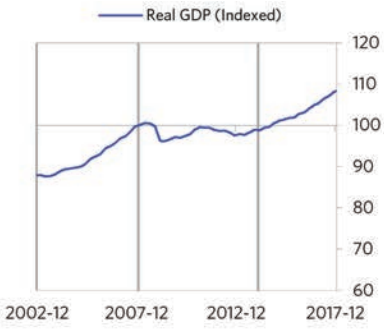
Monetary and Fiscal Policy

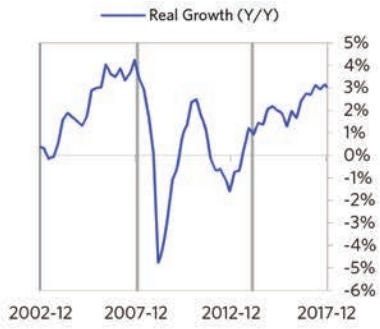


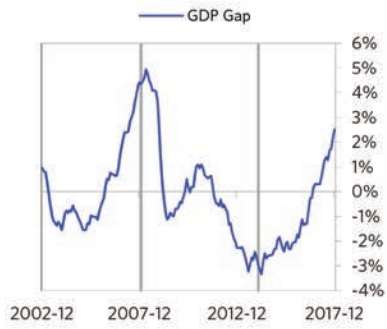


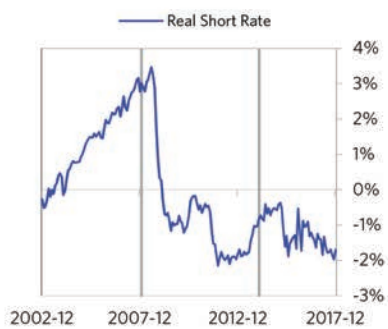


Economic Conditions



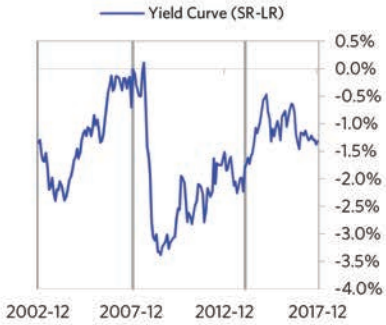


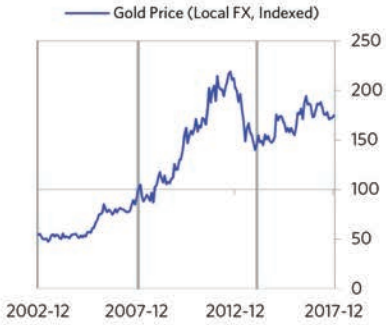




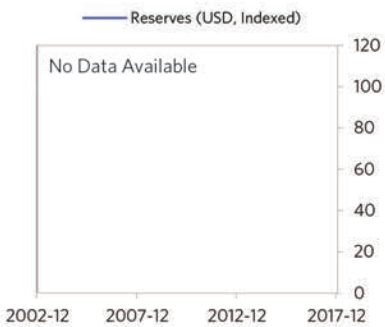
Netherlands 2006–2017 Chart Deck Appendix (cont.)

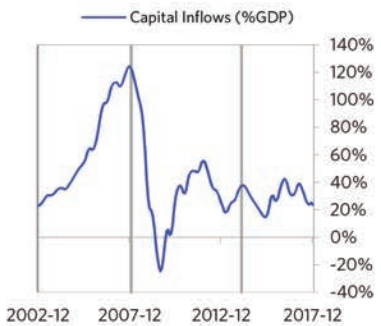
Markets

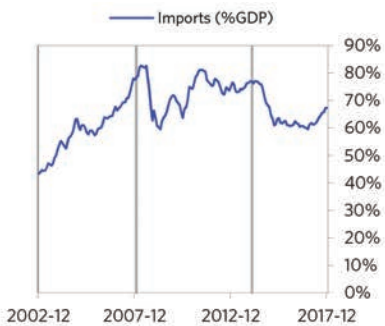


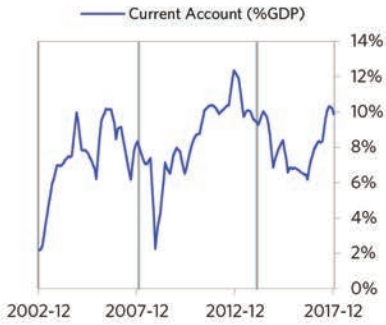


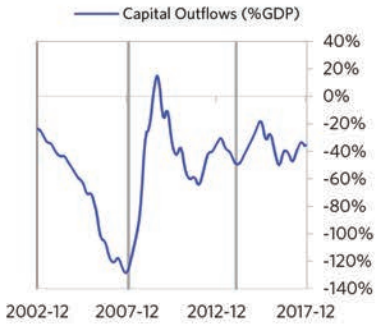
External Position

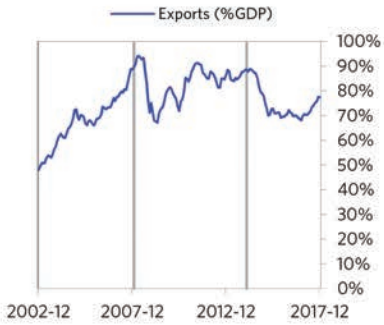












Portugal 2007–2017 Case Auto-Summary

As shown in the charts to the right, Portugal experienced a classic deflationary deleveraging cycle between 2007 and 2017.

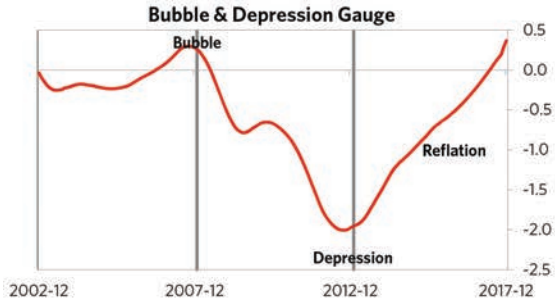
The Bubble Phase

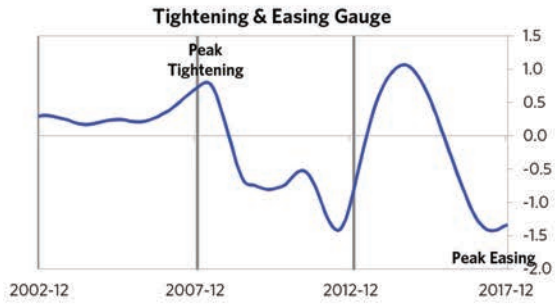
Between 2007 and 2008, Portugal experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 36% of GDP during the bubble to a pre-crisis peak of 273% of GDP. In this case, the debt was in Euros, which, while technically Portugal's domestic currency, is not a currency that Portugal had control over. In addition, a high share of debt was owned by foreigners, which left Portugal with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 10% of GDP, which helped to finance a current account deficit of 11% of GDP. Aided by that rising debt and capital, growth was moderate (at 2%), while levels of economic activity were high (the GDP gap peaked at 3%). Furthermore, strong asset returns (equities averaged 16% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 220 bps). Taken together, these bubble pressures and Portugal's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

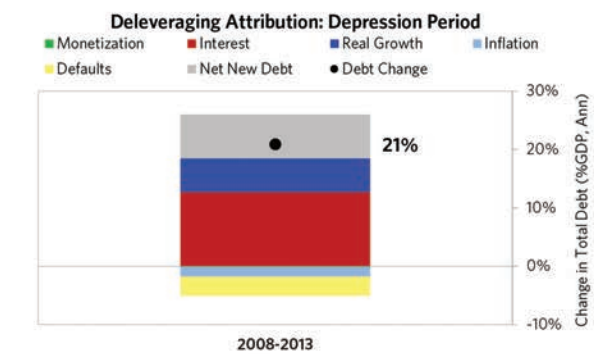
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2013. At its pre-crisis peak, debt service reached 48% of GDP, making Portugal vulnerable to a shock—which came in the form of the European debt crisis. Portugal suffered a fall in foreign funding (with portfolio inflows falling by 40% of GDP)—which in turn led to self-reinforcing declines in GDP (falling by 10%), in stock prices (falling by 65%) and in home prices (falling by 18%). Unemployment rates increased by 9%. Portugal's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Portugal needed a deleveraging, its debt as a % GDP went up by 105% (21% annualized), driven by a mix of falling real incomes, interest payments financed with new debt, and net new borrowing. Those new debts came in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 8% of GDP during the ugly period).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





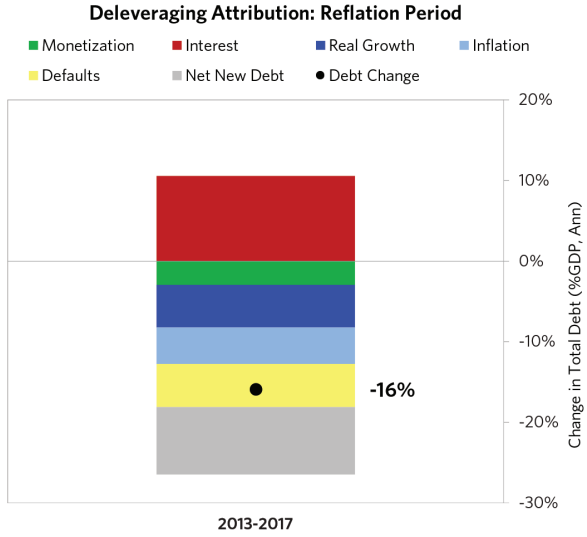


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Portugal 2007–2017 Case Auto-Summary (cont.)

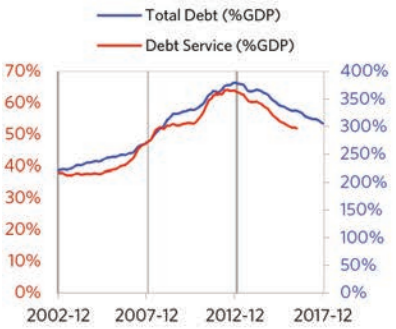
The Reflation Phase

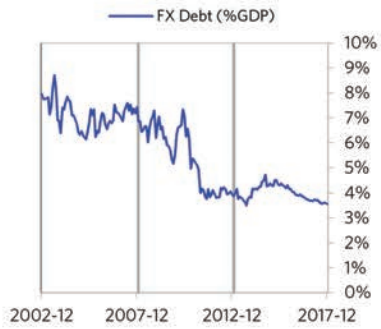
After a relatively long bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2013. In terms of monetary policy, M0 increased by 15% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -1% during the stimulative phase. Over the cycle, Portugal was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth above nominal interest rates (with growth averaging 2.0% during this period and sovereign long rates falling to 1.7%). During this phase, unemployment rates declined by 9% and debt as a % of GDP fell by 77% (16% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven by a mix of defaults and paying down existing debt. It took 9 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

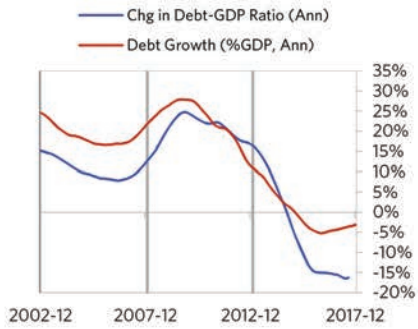


Portugal 2007–2017 Chart Deck Appendix

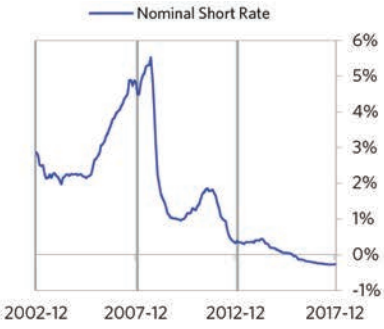
Indebtedness

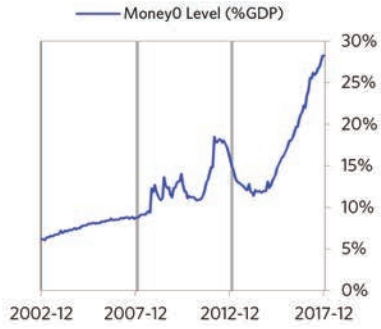


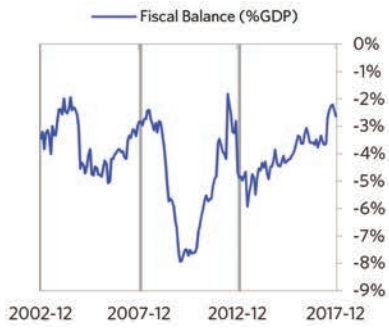




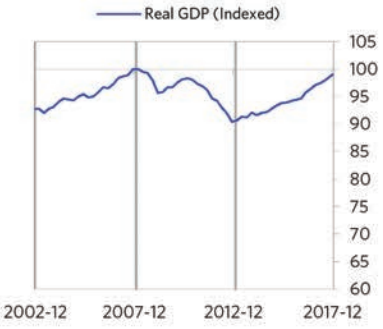
Monetary and Fiscal Policy

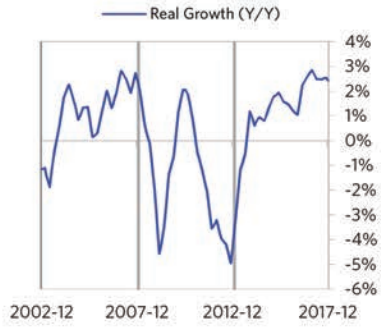


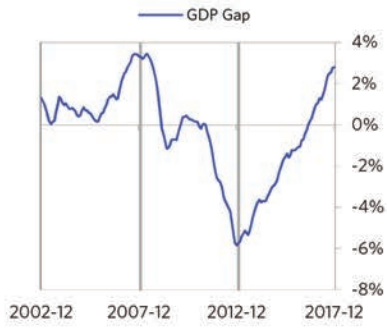


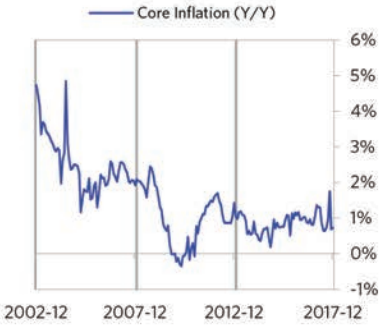


Economic Conditions



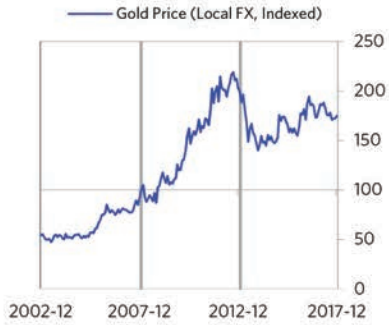




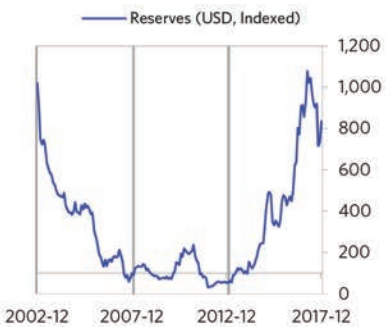


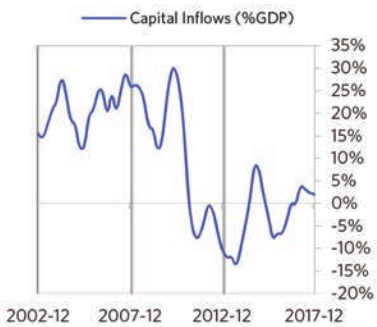
Portugal 2007–2017 Chart Deck Appendix (cont.)

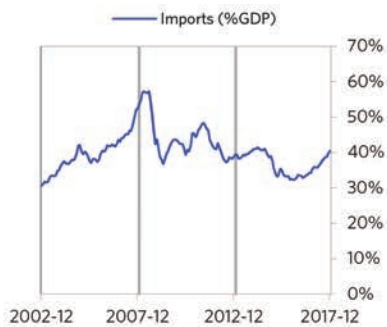
Markets

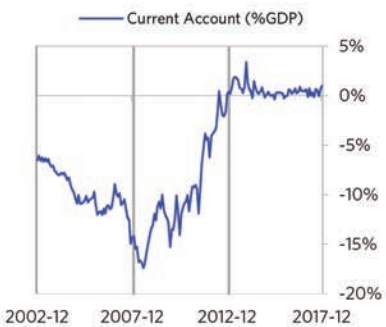


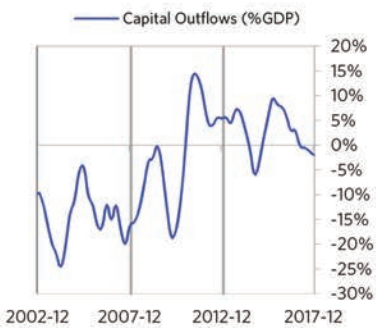
External Position

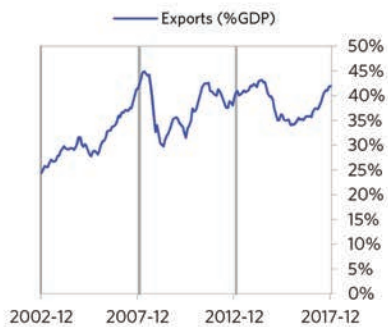












Spain 2005–2017 Case Auto-Summary

As shown in the charts to the right, Spain experienced a classic deflationary deleveraging cycle between 2005 and 2017.

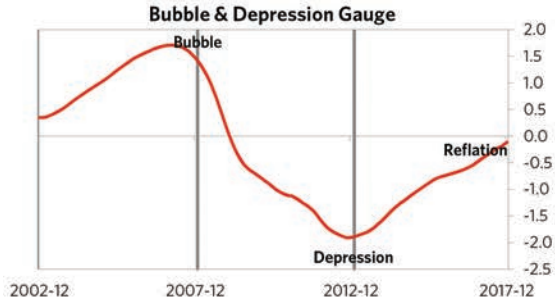
The Bubble Phase

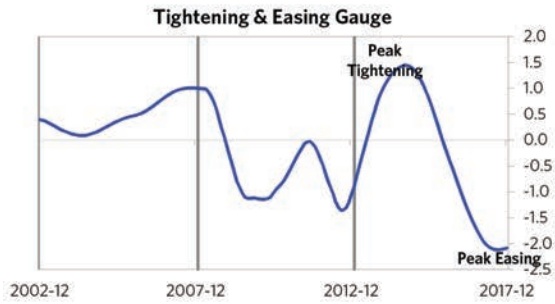
Between 2005 and 2008, Spain experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong growth and strong asset returns. Debts rose by 93% of GDP during the bubble to a pre-crisis peak of 313% of GDP. In this case, the debt was in Euros, which, while technically Spain's domestic currency, is not a currency that Spain had control over. In addition, a high share of debt was owned by foreigners, which left Spain with some exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 27% of GDP, which helped to finance a current account deficit of 10% of GDP. Aided by that rising debt and capital, growth was strong (at 4%), while levels of economic activity were high (the GDP gap peaked at 6%). Furthermore, strong asset returns (equities averaged 17% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. During this bubble period, policy makers initiated a moderate tightening (with short rates rising around 200 bps). Taken together, these bubble pressures and Spain's dependence on foreign financing, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

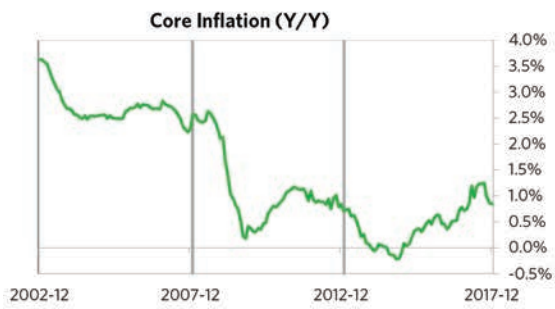
The Depression Phase

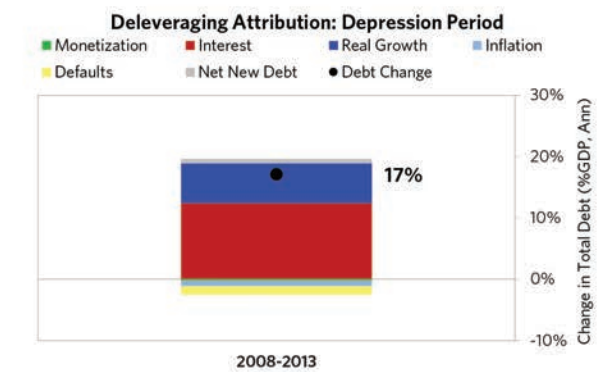
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2013. At its pre-crisis peak, debt service reached 64% of GDP, making Spain vulnerable to a shock—which came in the form of the European debt crisis. Spain suffered a fall in foreign funding (with capital inflows falling by 16% of GDP)—which in turn led to self-reinforcing declines in GDP (falling by 9%), in stock prices (falling by 60%) and in home prices (falling by 31%). Unemployment rates increased by 17%. Spain's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Spain needed a deleveraging, its debt as a % GDP went up by 86% (17% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by falling real incomes.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







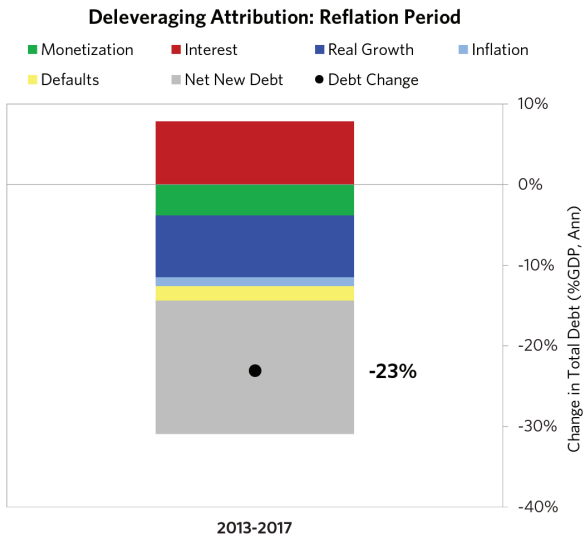


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Spain 2005–2017 Case Auto-Summary (cont.)

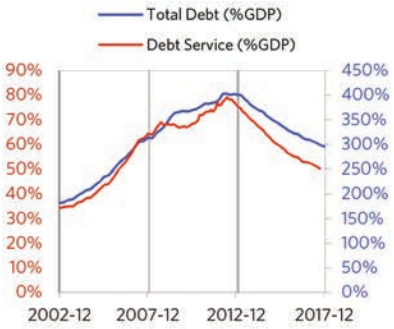
The Reflation Phase

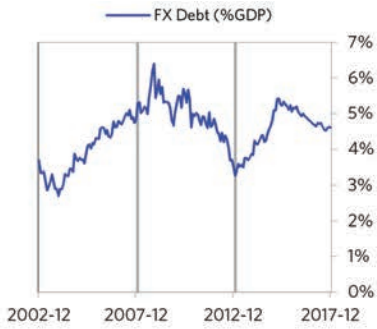
After a relatively long bust phase, ECB policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2013. In terms of monetary policy, M0 increased by 15% of GDP, interest rates were ultimately pushed down to -1%, and real FX averaged 0% during the stimulative phase. Over the cycle, Spain was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 classic policy levers. In particular, it provided liquidity and directly purchased troubled assets. It also enacted structural reforms designed to increase labor market flexibility. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 2% during this period and sovereign long rates falling to 1%). During this phase, unemployment rates declined by 10% and debt as a % of GDP fell by 112% (23% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven primarily by paying down existing debt and to a lesser extent by rising real incomes. It took 9 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

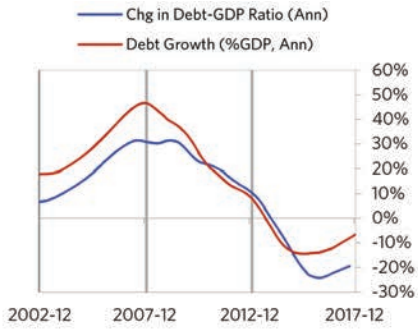


Spain 2005–2017 Chart Deck Appendix

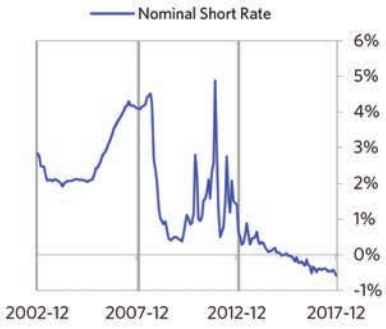
Indebtedness

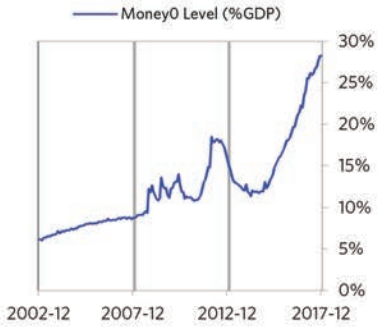


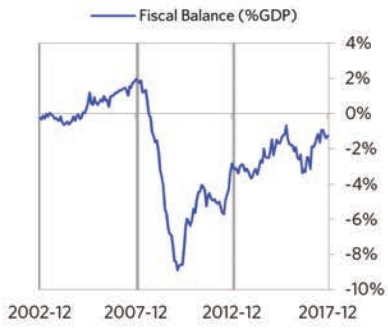




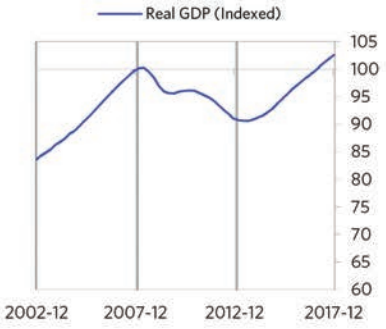
Monetary and Fiscal Policy

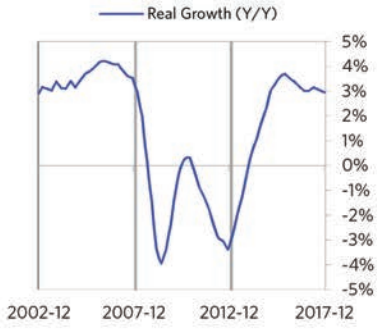


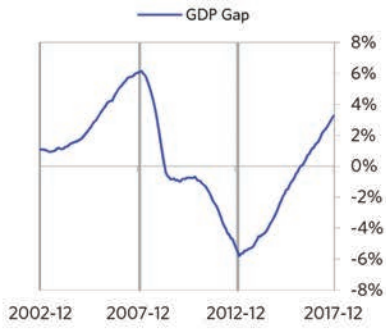


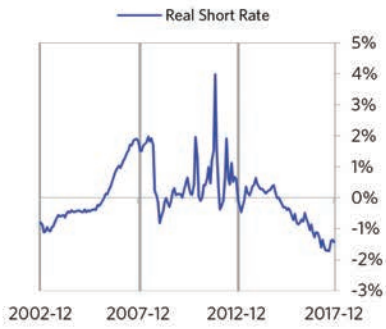


Economic Conditions



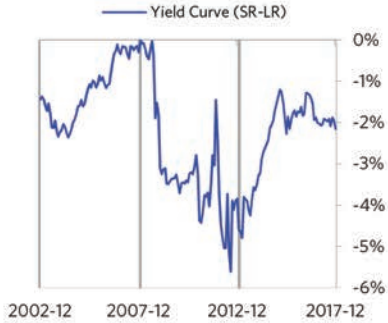


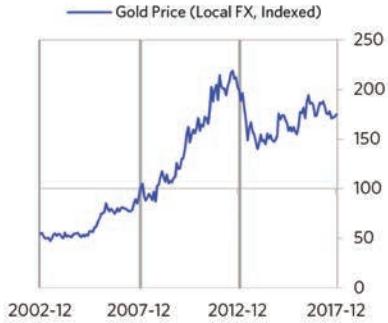




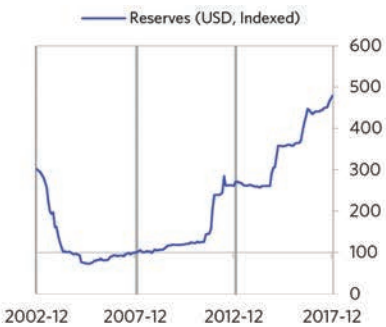
Spain 2005–2017 Chart Deck Appendix (cont.)

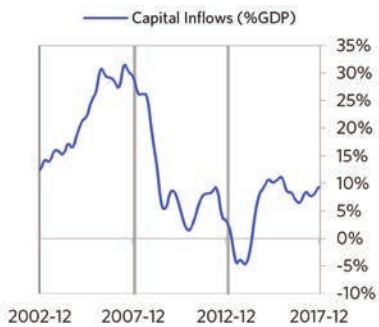
Markets

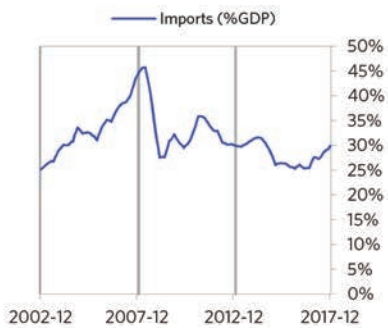


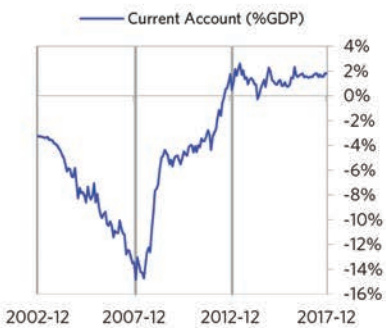


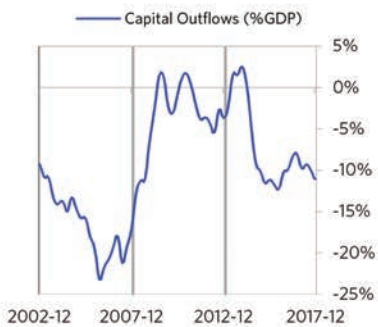
External Position











United Kingdom 2005–2015 Case Auto-Summary

As shown in the charts to the right, the United Kingdom experienced a classic deflationary deleveraging cycle between 2005 and 2015.

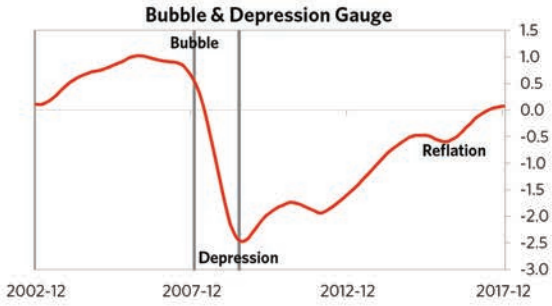
The Bubble Phase

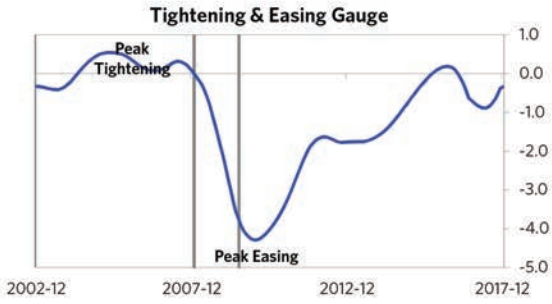
Between 2005 and 2008, the United Kingdom experienced a bubble that was driven by a self-reinforcing cycle of rising debt and strong growth. Debts rose by 89% of GDP during the bubble to a pre-crisis peak of 437% of GDP. In this case, the debt was in the United Kingdom's domestic currency, and the majority was owned domestically, too. During the bubble phase, investment inflows were strong, averaging around 14% of GDP, which helped to finance a current account deficit of 3% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 4%). Furthermore, strong asset returns (equities averaged 8% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures, combined with tightening money and credit and the weakened conditions of related countries, created an unsustainable situation.

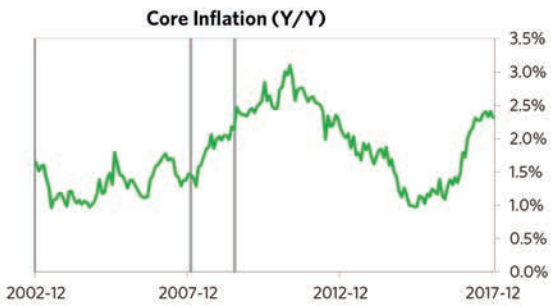
The Depression Phase

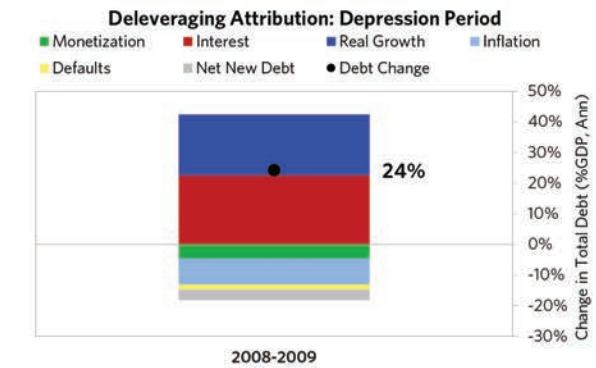
Eventually the dynamic turned, producing a self-reinforcing bust and an "ugly deleveraging," which ran from 2008 to 2009. At its pre-crisis peak, debt service reached 82% of GDP, making the United Kingdom vulnerable to a shock—which came in the form of the 2008 global financial crisis. The United Kingdom suffered from self-reinforcing declines in GDP (falling by 6%), in stock prices (falling by 52%) and in home prices (falling by 19%). Unemployment rates increased by 3%. The United Kingdom's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though the United Kingdom needed a deleveraging, its debt as a % GDP went up by 34% (24% annualized), driven primarily by interest payments financed with new debt and to a lesser extent by falling real incomes.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







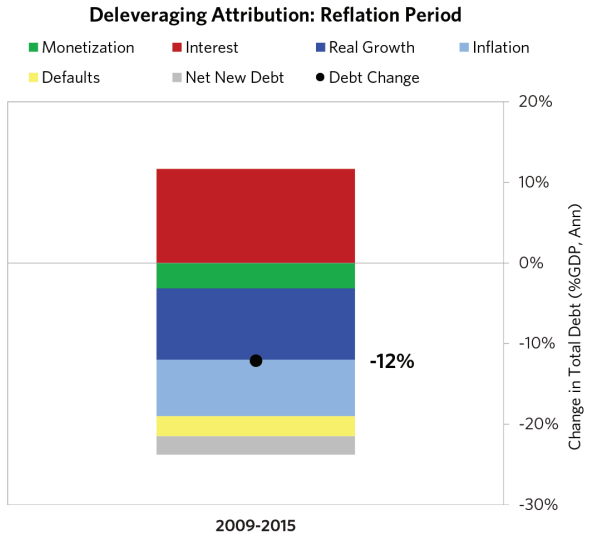


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

United Kingdom 2005–2015 Case Auto-Summary (cont.)

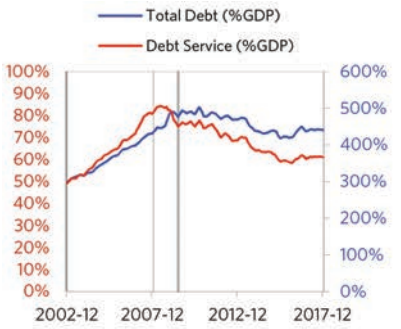
The Reflation Phase

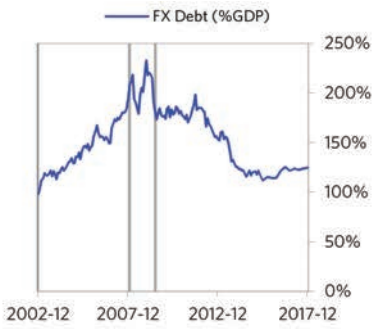
After a slightly shorter than average bust phase, policy makers were able to provide enough stimulation to turn the deleveraging into a beautiful one and create a period of reflation, which began in 2009. In terms of monetary policy, M0 increased by 10% of GDP, interest rates were ultimately pushed down to 0%, and real FX averaged -5% during the stimulative phase. Over the cycle, the United Kingdom was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. This stimulation helped bring nominal growth well above nominal interest rates (with growth averaging 4% during this period and sovereign long rates falling to 1%). During this phase, unemployment rates declined by 2% and debt as a % of GDP fell by 73% (12% annualized), as shown in the attribution chart to the right. Throughout this "beautiful" period, the reduction in debt-to-income ratios was driven by a mix of rising real incomes and inflation. This was partially offset by interest payments financed with new debt. It took 5 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

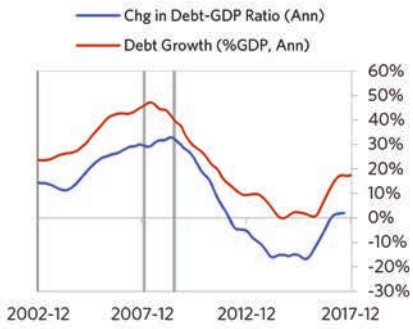


United Kingdom 2005–2015 Chart Deck Appendix

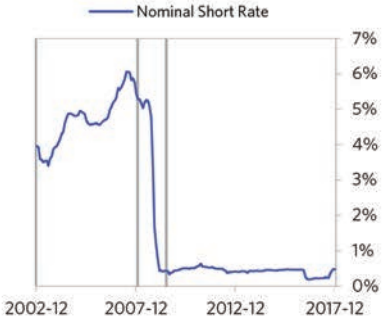
Indebtedness

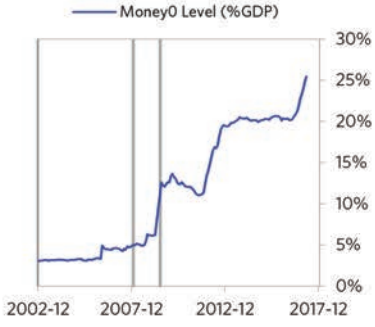


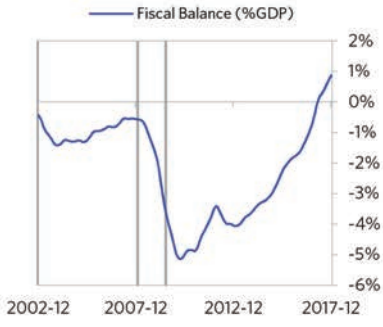




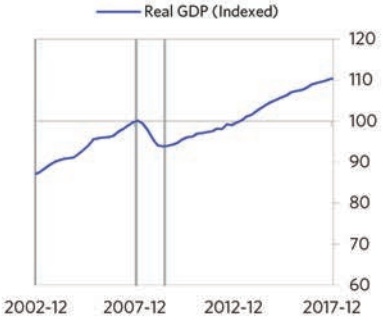
Monetary and Fiscal Policy

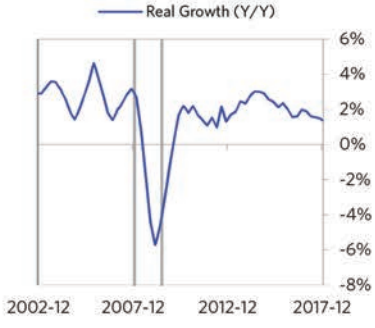


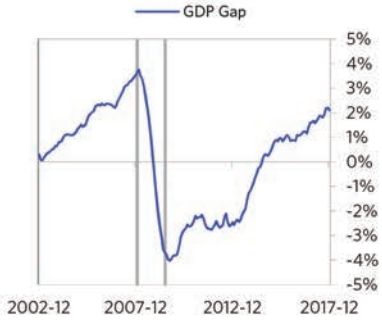


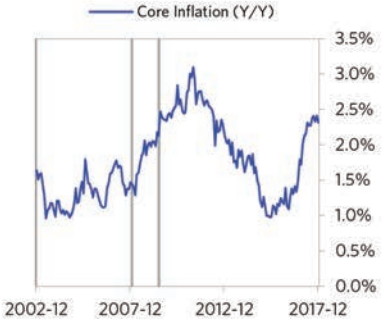


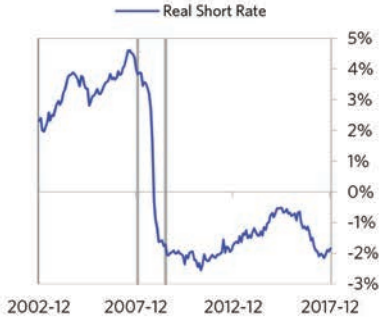
Economic Conditions





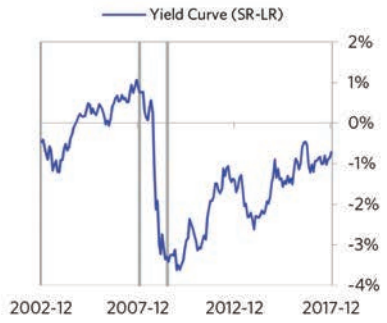


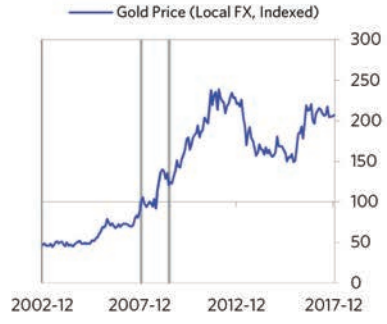




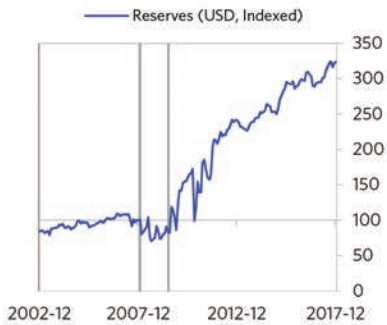
United Kingdom 2005–2015 Chart Deck Appendix (cont.)

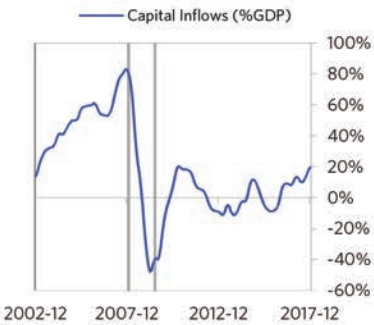
Markets

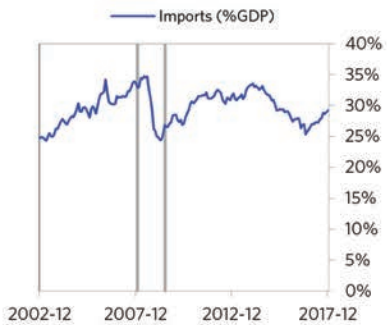


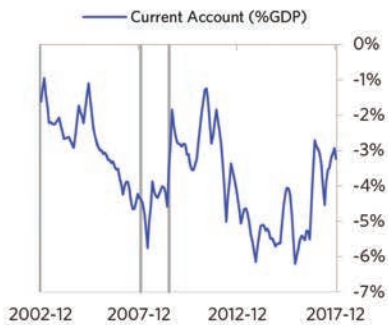


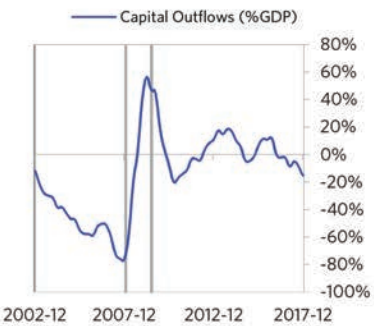
External Position

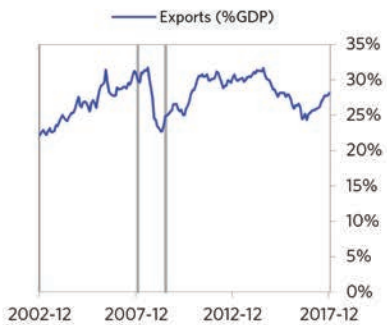












Germany 1918–1925 Case Auto-Summary

As shown in the charts to the right, Germany experienced a classic wartime hyperinflationary deleveraging cycle between 1918 and 1925. As is typical for losers of big wars, Germany experienced a prolonged postwar depression (given widespread damage to its industrial base), and a more painful deleveraging.

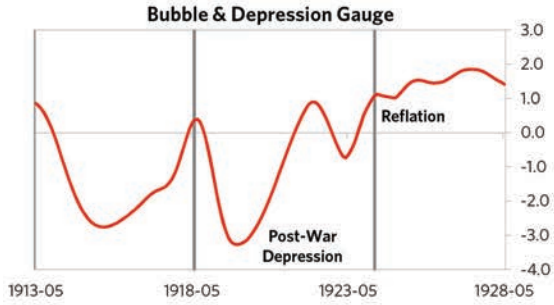
The War Phase

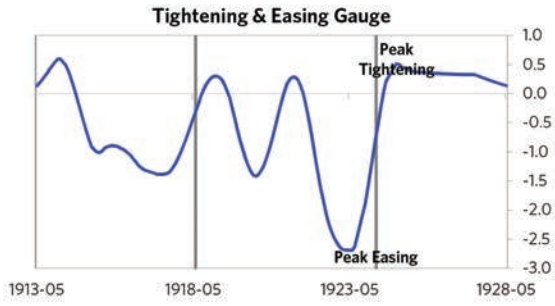
Unlike the typical case that entails a bubble, this debt crisis had its roots in WW1. During the war, Germany borrowed a lot of money to finance its big fiscal deficit, shifted much of its economy to war production, and shifted much of its workforce to the armed services and war production. For these reasons, the economic stats are not reflective of typical economic linkages. Through the war, debts rose to 158% of GDP. In this case, a high share of the debt was in foreign currencies (64% of GDP). Hampered by wartime losses, growth was weak through this period (at -6%).

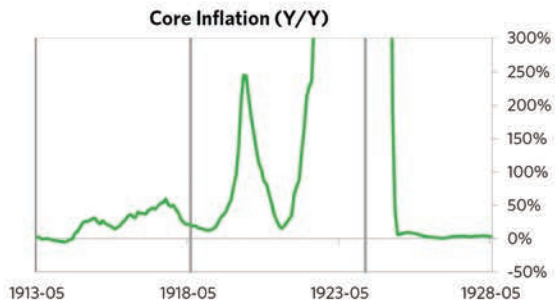
The Post-War Phase

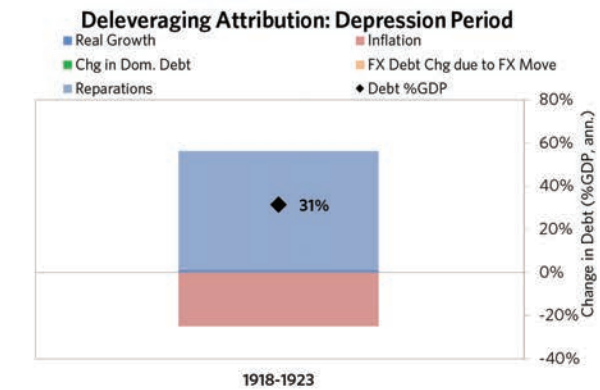
When the fighting ended, Germany entered a postwar depression and balance of payments crisis, which ran from 1918 to 1923. Since Germany lost the war and was saddled with very large foreign currency debts, its post-war depression was far worse than it was for the winners. Germany suffered from self-reinforcing declines in GDP (falling by 5%), and in stock prices (falling by 97%). Unemployment rates increased by 16%. Germany's financial institutions also came under considerable pressure. As shown in the attribution chart to the right, even though Germany needed a deleveraging, its debt as a % GDP went up by 165% (31% annualized) as incomes declined and as the government continued to shoulder war-related costs (with a peak fiscal deficit of 11% of GDP during the ugly period).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







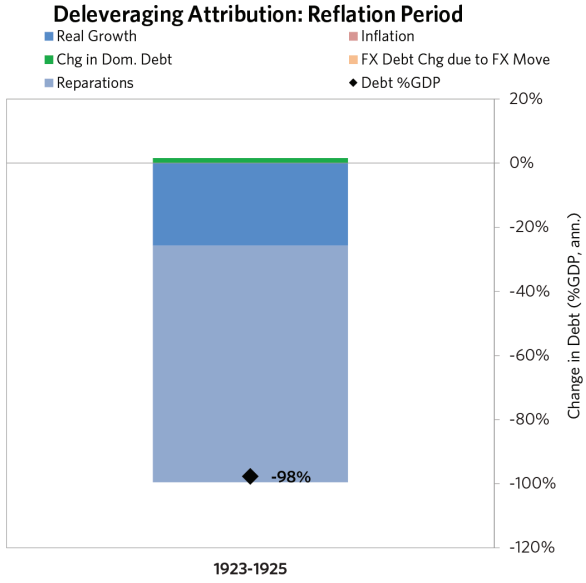


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Germany 1918–1925 Case Auto-Summary (cont.)

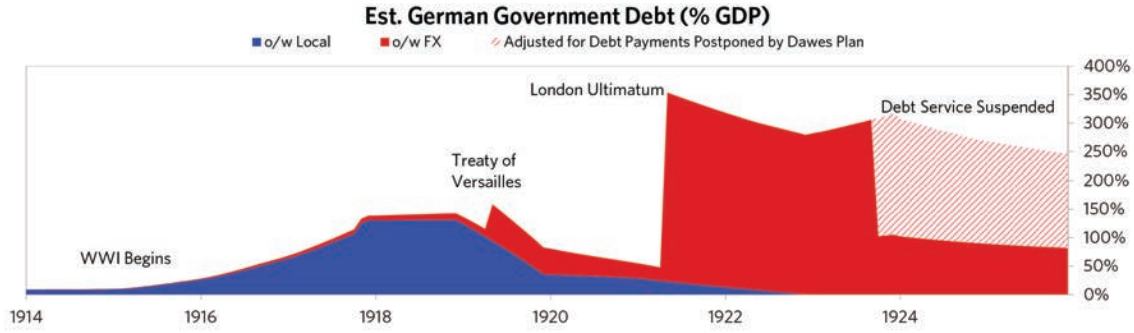
The Reflation Phase

A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Inflation peaked at over 10,000%. That makes sense given that Germany had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being their fiscal deficit). Germany was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 typical policy levers. But, as is classic, stopping the inflationary spiral ultimately required Germany to make more significant structural changes, including abandoning the hyperinflated papiermark and adopting the reichsmark in 1924. It took 15 years before real GDP reached its prior peak.

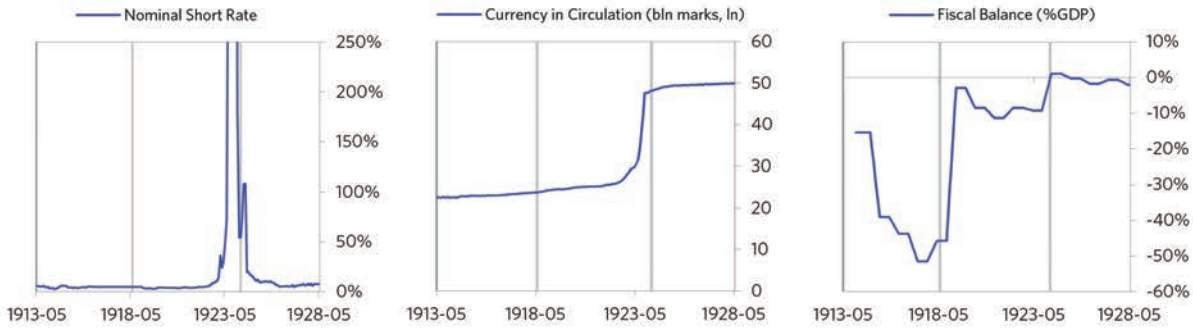


Germany 1918–1925 Chart Deck Appendix

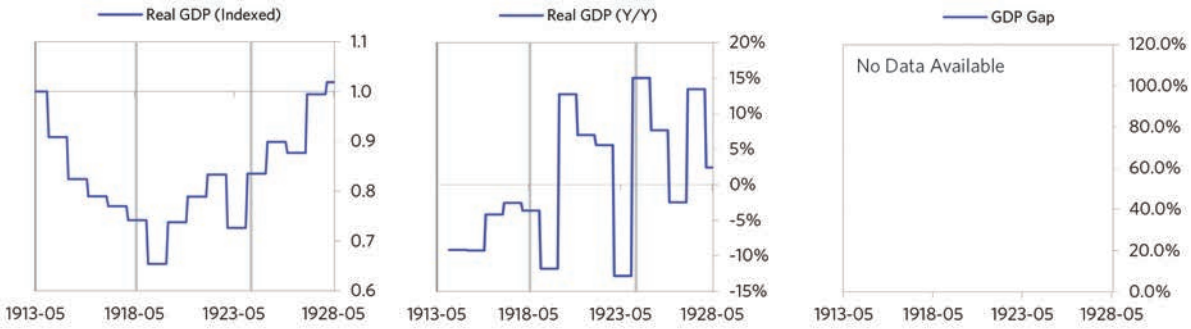
Indebtedness

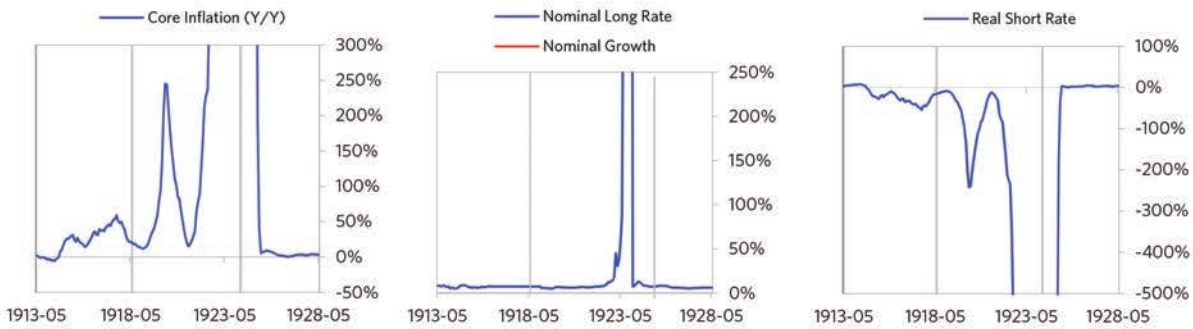


Monetary and Fiscal Policy



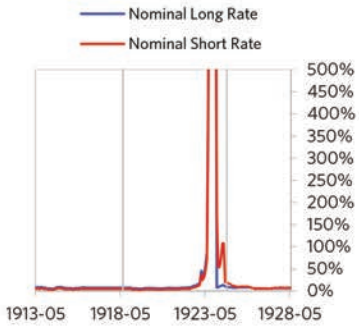
Economic Conditions

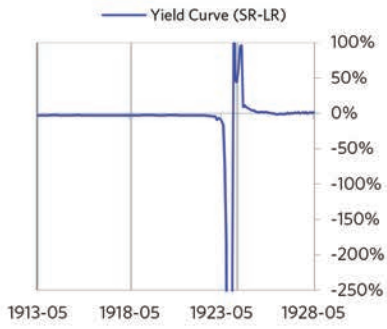


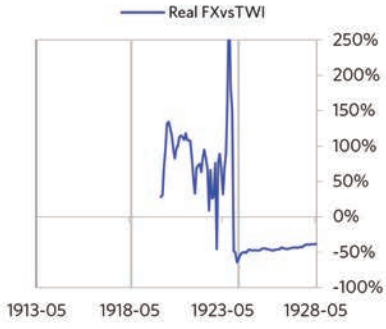


Germany 1918–1925 Chart Deck Appendix (cont.)

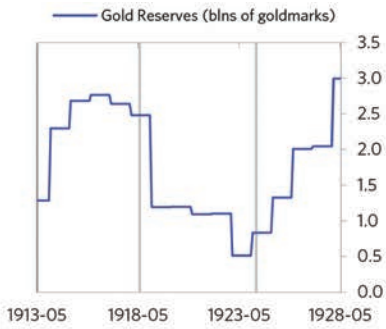
Markets

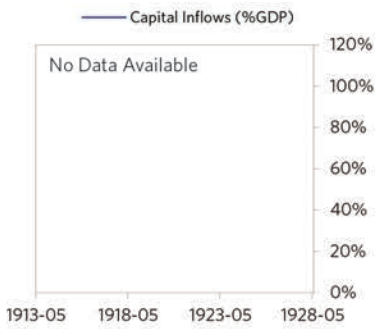


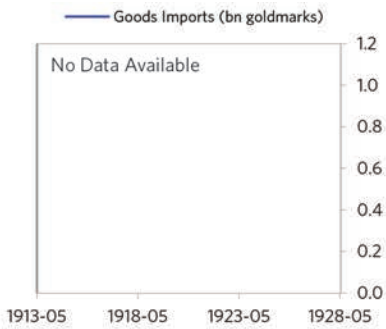


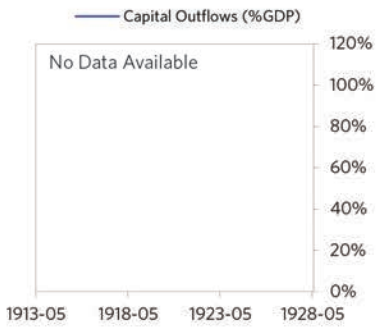


External Position



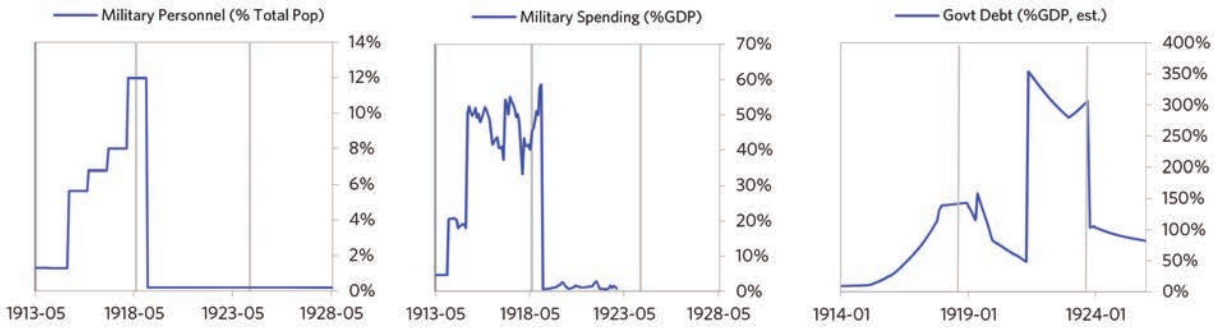






Germany 1918–1925 Chart Deck Appendix (cont.)

Government and Military



Argentina 1977–1988 Case Auto-Summary

As shown in the charts to the right, Argentina experienced a classic hyperinflationary deleveraging cycle between 1977 and 1988.

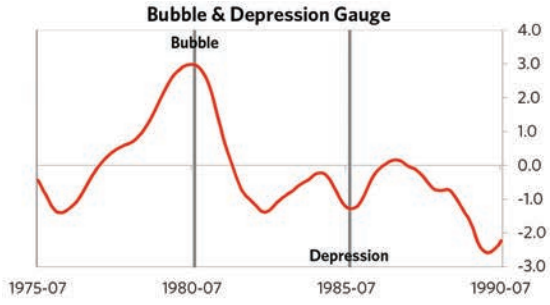
The Bubble Phase

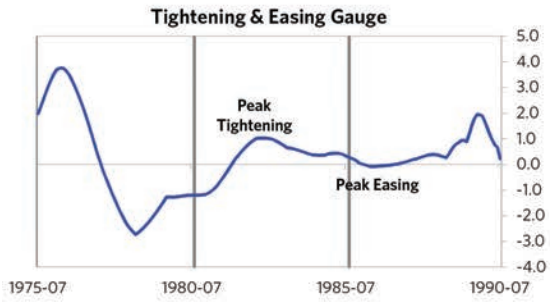
Between 1977 and 1980, Argentina experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. By the bubble's end, debts had reached a pre-crisis peak of 39% of GDP. In this case, a high share of the debt was in foreign currencies (15% of GDP)—leaving Argentina with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were low but positive, averaging around 2% of GDP. Aided by that rising debt and capital, growth was moderate (at 2%), while levels of economic activity were high (the GDP gap peaked at 8%). Furthermore, strong asset returns (equities averaged 52% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Competitiveness became an issue, as Argentina's real FX peaked at +70%. Taken together, these bubble pressures and Argentina's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

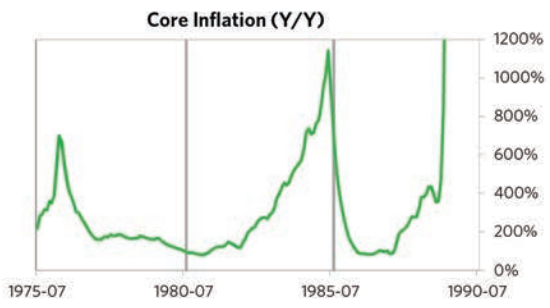
The Depression Phase

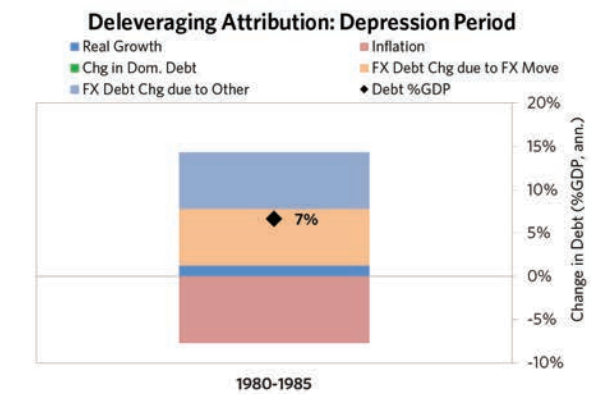
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1980 to 1985. High debt levels left Argentina vulnerable to a shock—which came in the form of the 1980s Latin American Debt Crisis. Argentina suffered a fall in foreign funding (with capital inflows falling by 9% of GDP), leading to a tightening (policy makers hiked short rates by more than 250%) and a meaningful decline in the currency (real FX fell by 93%)—which coincided with self-reinforcing declines in GDP (falling by 14%), and in stock prices (falling by 91%). Unemployment rates increased by 3%, while currency weakness contributed to very high and rising inflation. Argentina's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 83%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Argentina needed a deleveraging, its debt as a % GDP went up by 33% (7% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







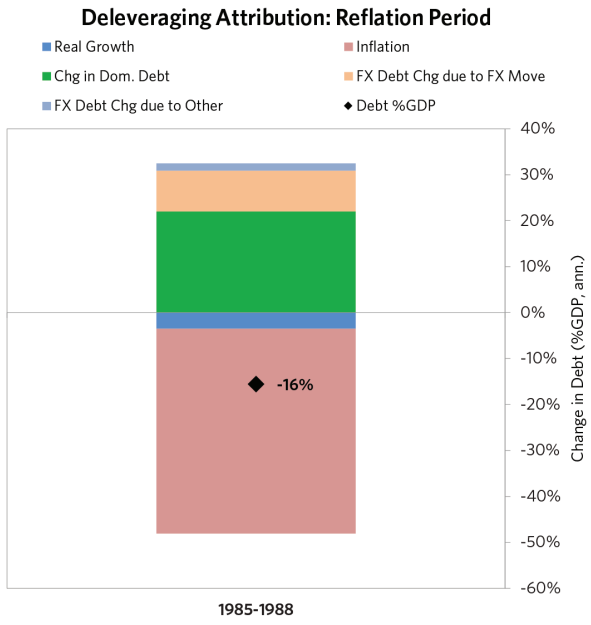


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Argentina 1977–1988 Case Auto-Summary (cont.)

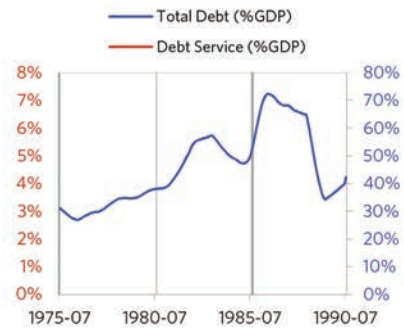
The Reflation Phase

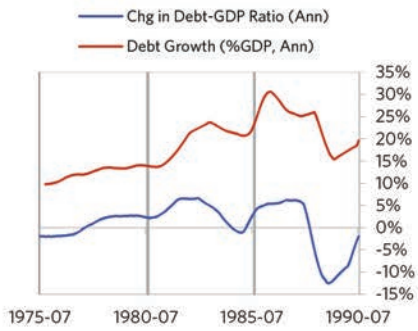
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Real FX bottomed at -138% and inflation peaked at over 1,000%. That makes sense given that Argentina had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low real short rates). Argentina was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 typical policy levers. In particular, it nationalized banks and provided liquidity. It also benefited from an IMF assistance program. But, as is classic, stopping the inflationary spiral ultimately required Argentina to make more significant structural changes, including abandoning the hyperinflated peso ley and adopting the peso argentino in 1983. It took 7 years before real GDP reached its prior peak.



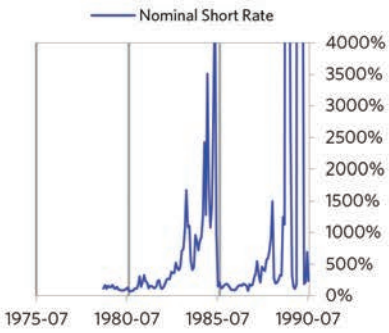
Argentina 1977–1988 Chart Deck Appendix

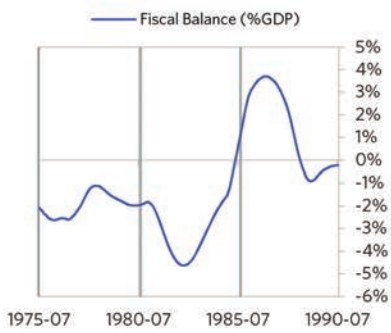
Indebtedness



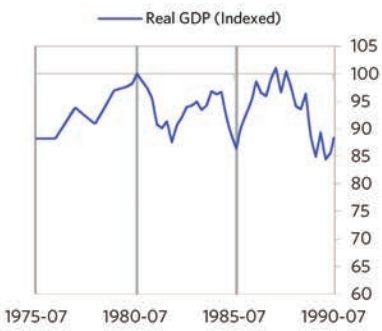


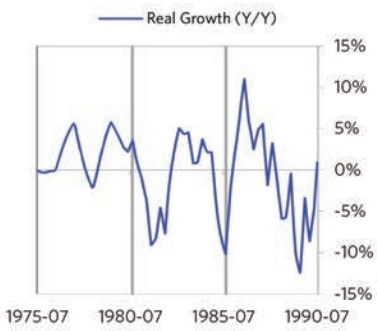
Monetary and Fiscal Policy

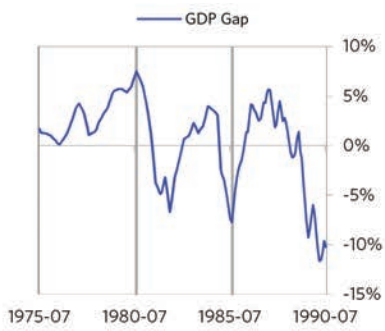


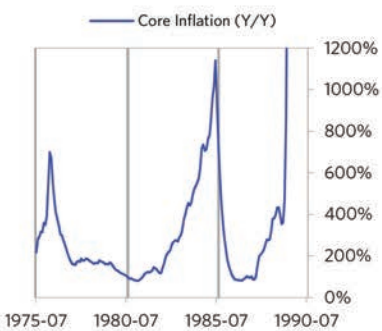


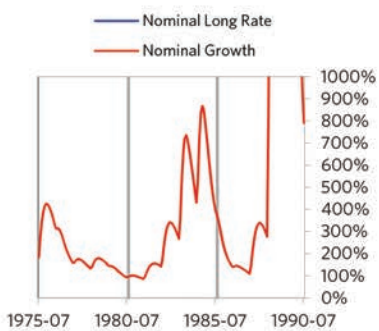
Economic Conditions

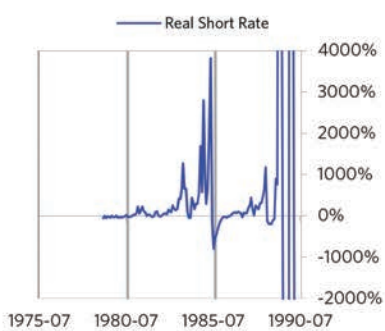






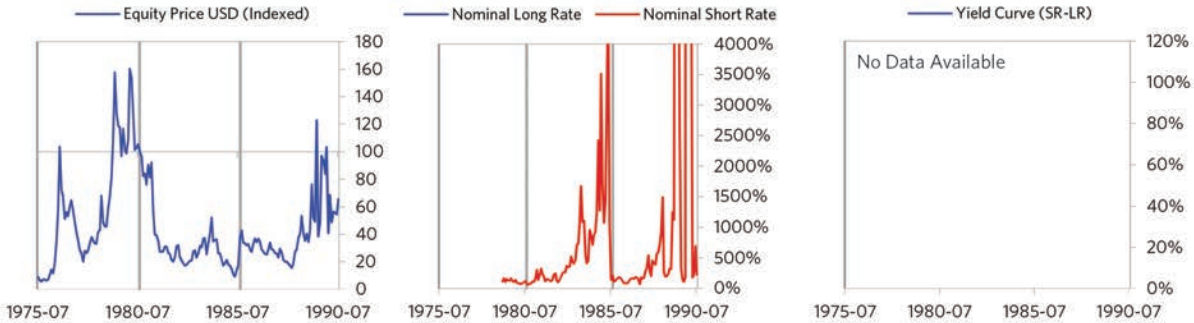




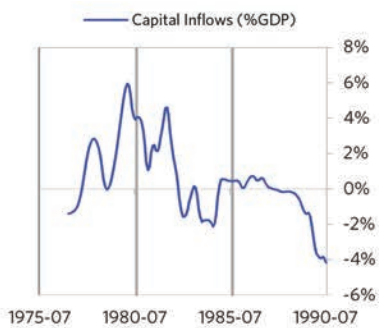


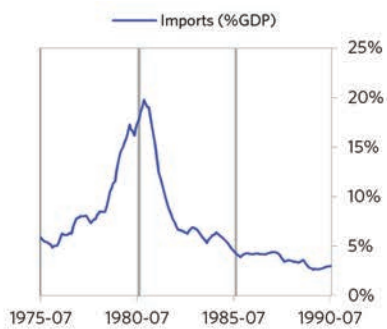
Argentina 1977–1988 Chart Deck Appendix (cont.)

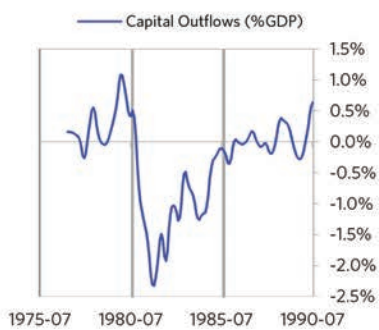
Markets



External Position







Brazil 1977–1987 Case Auto-Summary

As shown in the charts to the right, Brazil experienced a classic inflationary deleveraging cycle between 1977 and 1987.

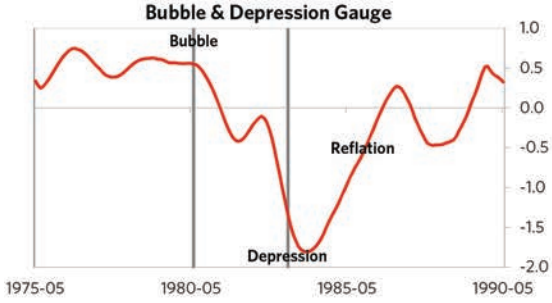
The Bubble Phase

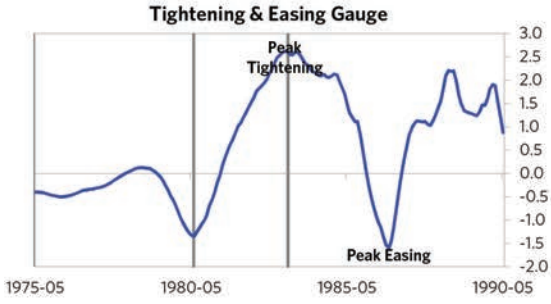
Unlike many other cases, Brazil didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock driven by unsustainably strong capital inflows, with debts reaching 158% of GDP prior to the crisis. In this case, a high share of the debt was in foreign currencies (70% of GDP)—leaving Brazil with a large exposure to a pullback in foreign capital. Brazil also became somewhat dependent on continuous foreign financing, running a current account deficit of 5% of GDP (with investment inflows averaging 6% of GDP in the years before the crisis). Ultimately, these high debts and Brazil's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

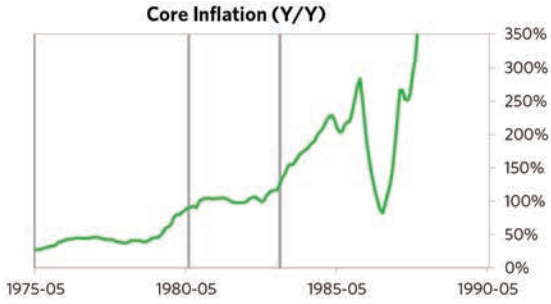
The Depression Phase

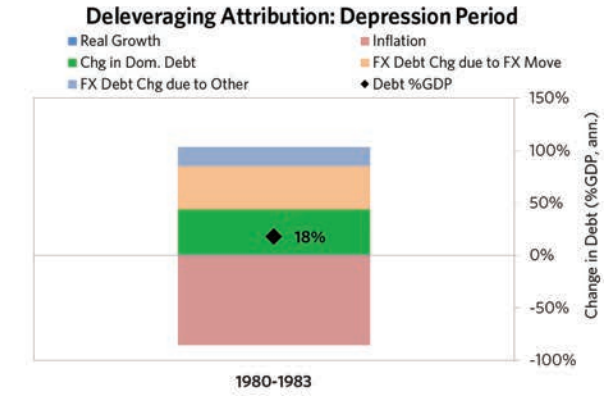
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1980 to 1983. High debt levels left Brazil vulnerable to a shock—which came in the form of the 1980s Latin American Debt Crisis. Brazil suffered a fall in foreign funding (with capital inflows falling by 5% of GDP), leading to a tightening (policy makers hiked short rates by 234%) and a meaningful decline in the currency (real FX fell by 20%)—which coincided with self-reinforcing declines in GDP (falling by 6%), and in stock prices (falling by 51%). In addition, currency weakness contributed to very high and rising inflation, peaking at 124% during the depression phase, which is high compared to other similar cases. That makes sense given that Brazil had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low real short rates). Brazil's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 70%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Brazil needed a deleveraging, its debt as a % GDP went up by 54% (18% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 11% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







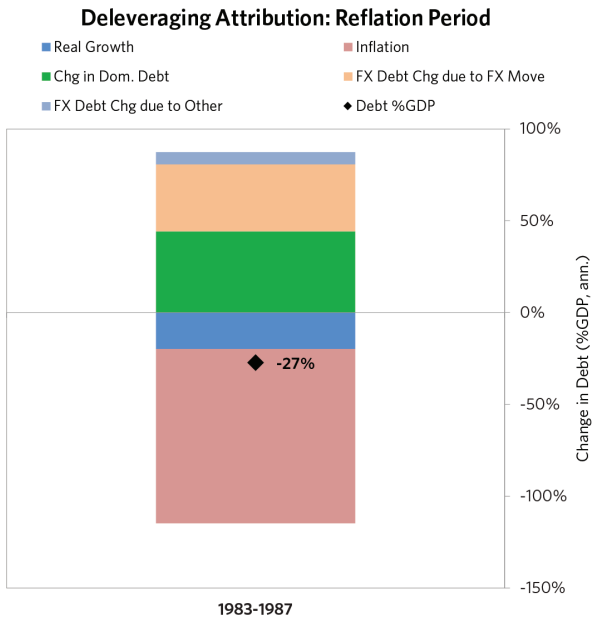


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Brazil 1977–1987 Case Auto-Summary (cont.)

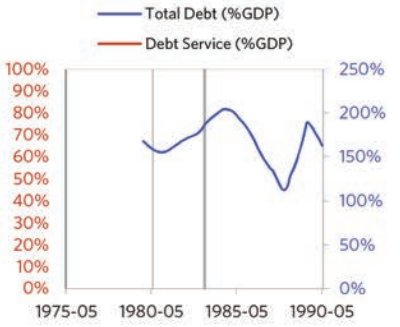
The Reflation Phase

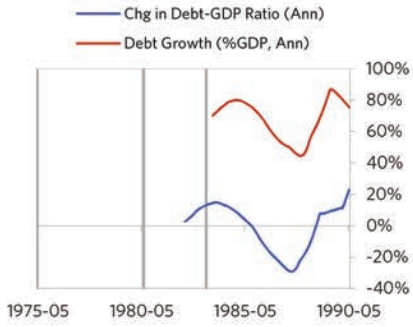
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly longer than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 3% of GDP), and make the currency more attractive to hold. Brazil was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. It also benefited from an IMF assistance program. As shown in the attribution chart to the right, debt as a % of GDP fell by 121% (27% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Brazil's now lower currency (with real FX bottoming at -33% during the beautiful period) set up the country for renewed competitiveness. It took 4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 1.9 years.



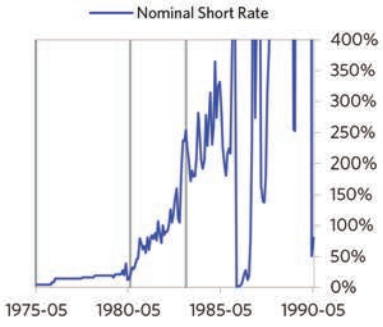
Brazil 1977–1987 Chart Deck Appendix

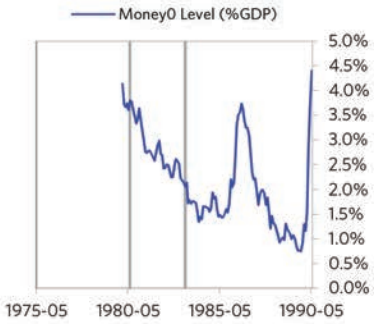
Indebtedness

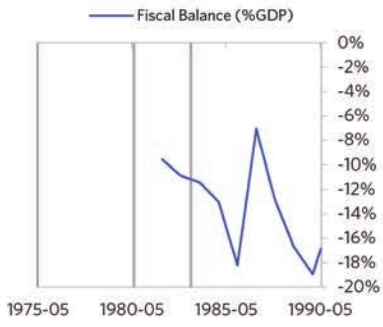




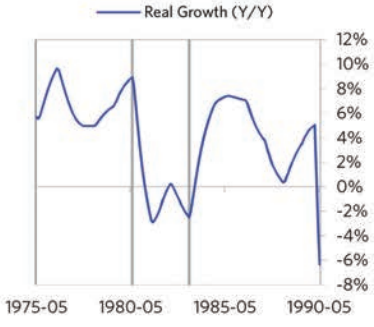
Monetary and Fiscal Policy

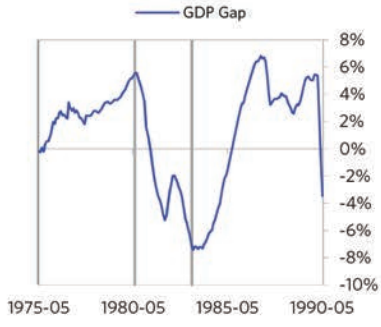


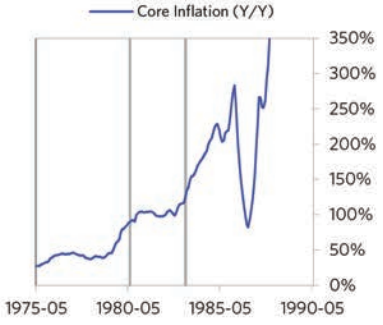


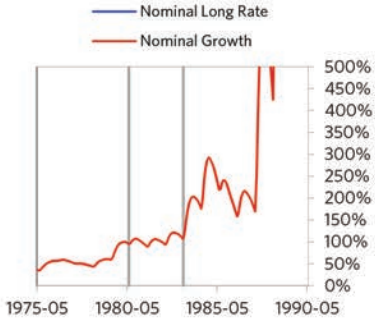


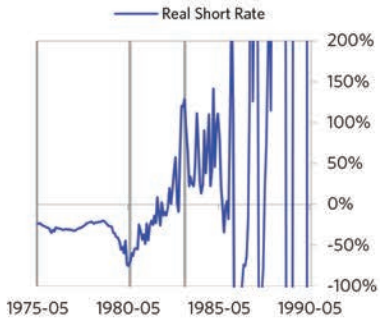
Economic Conditions





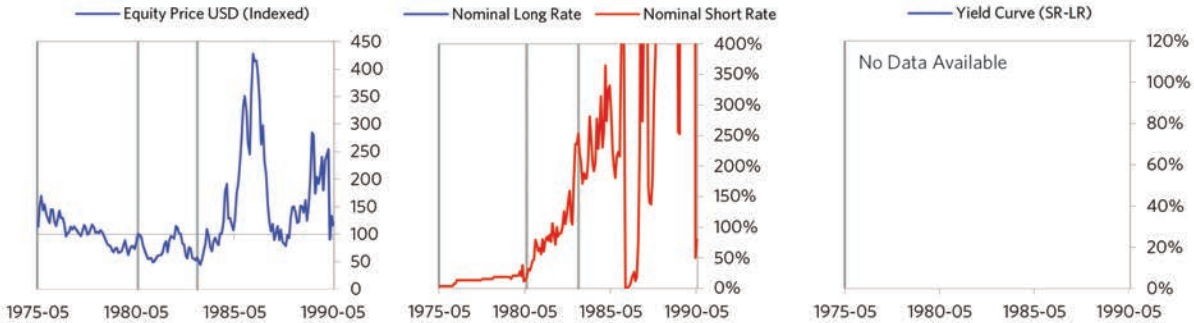


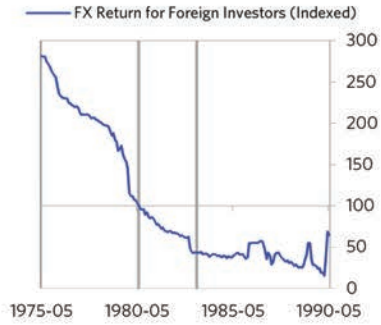


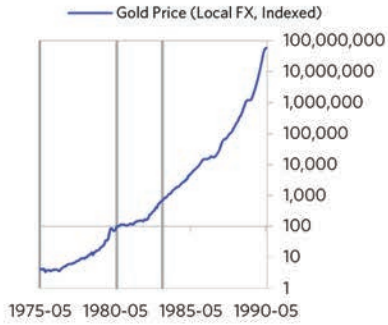


Brazil 1977–1987 Chart Deck Appendix (cont.)

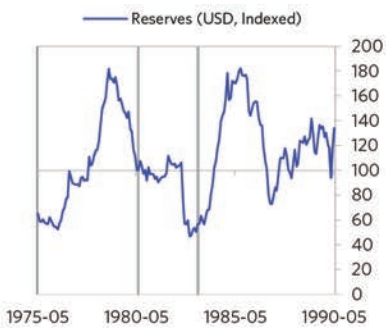
Markets

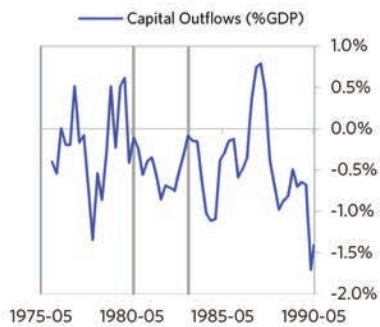






External Position





Chile 1978–1995 Case Auto-Summary

As shown in the charts to the right, Chile experienced a classic inflationary deleveraging cycle between 1978 and 1995.

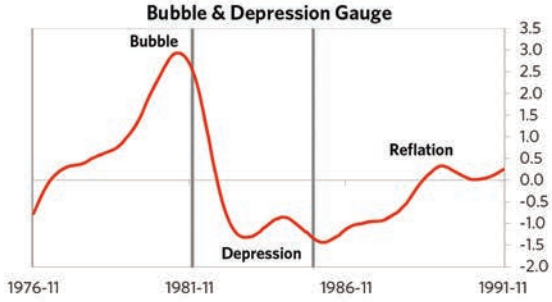
The Bubble Phase

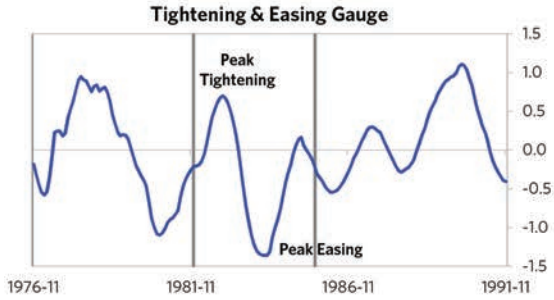
Between 1978 and 1981, Chile experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong equity returns, and strong growth. Debts rose by 86% of GDP during the bubble to a pre-crisis peak of 145% of GDP. In this case, a high share of the debt was in foreign currencies (32% of GDP)—leaving Chile with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 14% of GDP, which helped to finance a current account deficit of 11% of GDP. Aided by that rising debt and capital, growth was strong (at 7%), while levels of economic activity were high (the GDP gap peaked at 11%). Furthermore, strong asset returns (equities averaged 36% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Competitiveness became an issue, as Chile's real FX peaked at +36%. Taken together, these bubble pressures and Chile's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

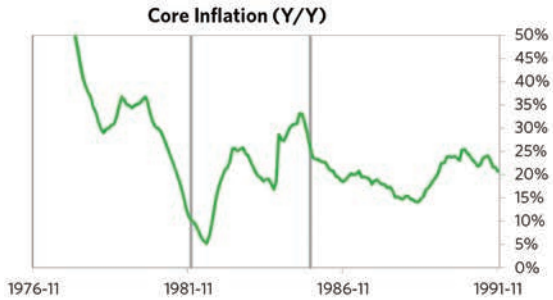
The Depression Phase

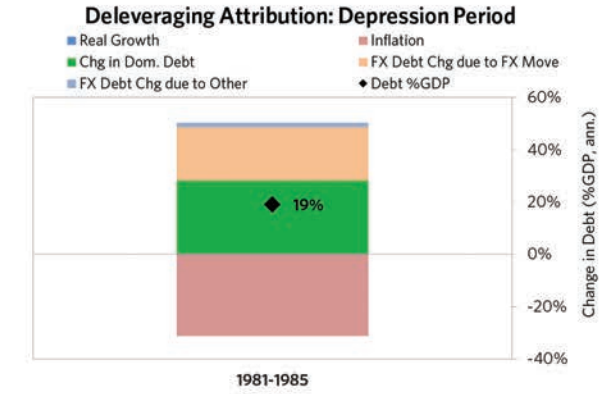
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1981 to 1985. At its pre-crisis peak, debt service reached 45% of GDP, making Chile vulnerable to a shock—which came in the form of the 1980s Latin American Debt Crisis. Chile suffered a fall in foreign funding (with capital inflows falling by 40% of GDP), leading to a tightening (policy makers hiked short rates by 31%) and a meaningful decline in the currency (real FX fell by 50%)—which coincided with self-reinforcing declines in GDP (falling by 14%), and in stock prices (falling by 74%). In addition, currency weakness contributed to high and rising inflation, peaking at 33% during the depression phase, which is normal compared to other similar cases. That's true despite the fact that Chile had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Chile's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 53%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Chile needed a deleveraging, its debt as a % GDP went up by 73% (19% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 4% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







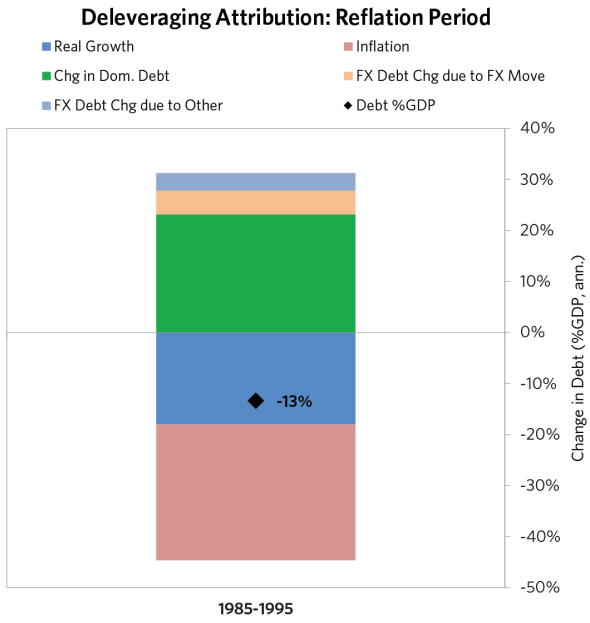


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Chile 1978–1995 Case Auto-Summary (cont.)

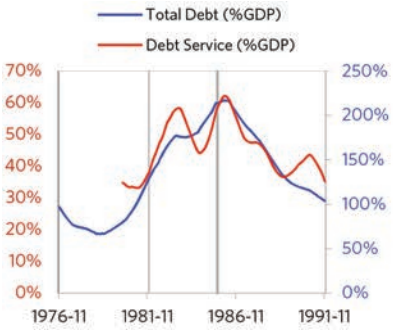
The Reflation Phase

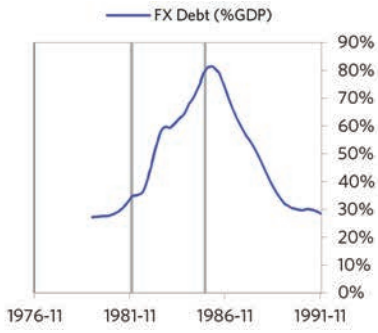
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly longer than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 11% of GDP), and make the currency more attractive to hold. Chile was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 classic policy levers. In particular, it provided liquidity and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 129% (13% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Chile's now much lower currency (with real FX bottoming at -32% during the beautiful period) set up the country for renewed competitiveness. It took 5 years before real GDP reached its prior peak and equity prices in USD terms recovered within 9 years.

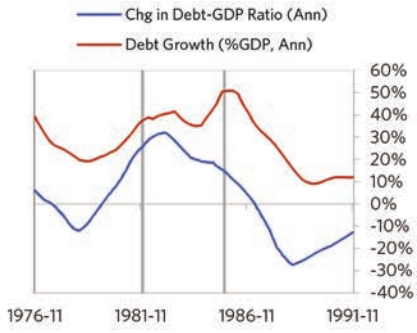


Chile 1978–1995 Chart Deck Appendix

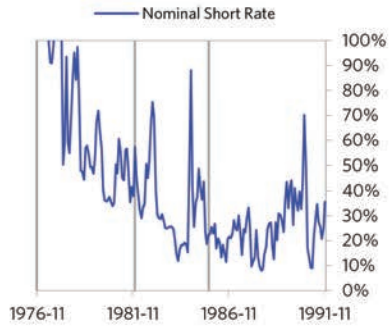
Indebtedness

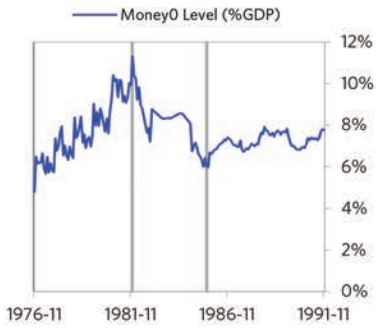


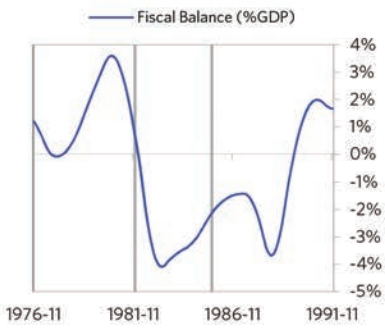




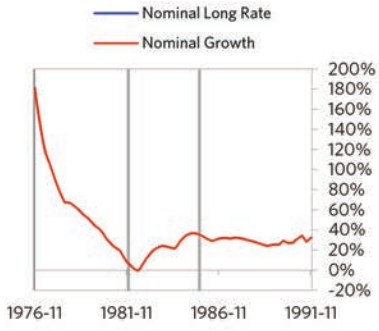
Monetary and Fiscal Policy

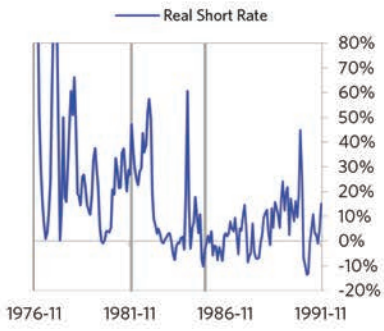






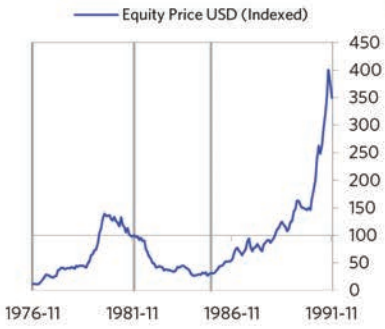
Economic Conditions

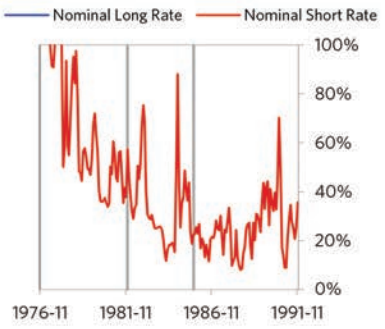


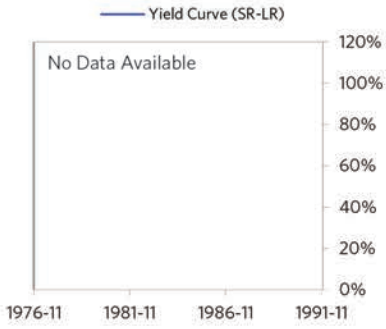


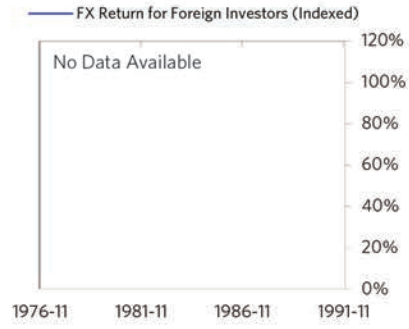
Chile 1978–1995 Chart Deck Appendix (cont.)

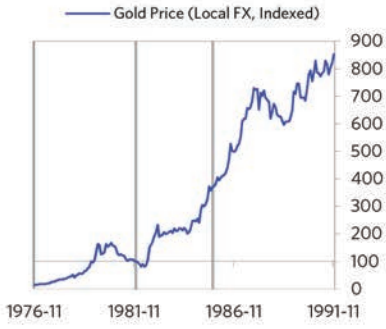
Markets



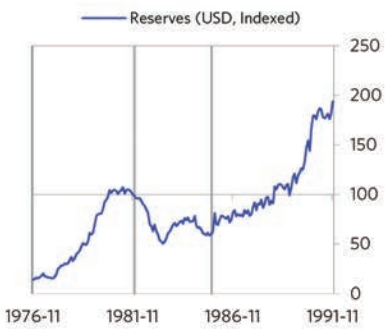


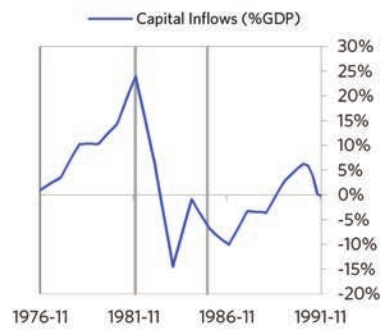


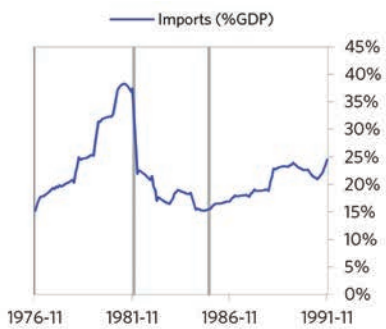


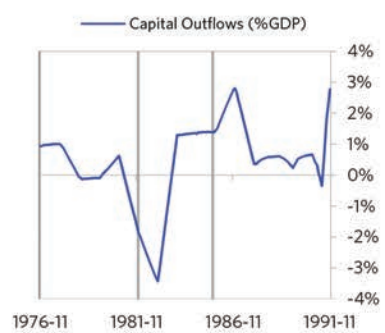


External Position









Mexico 1979–1991 Case Auto-Summary

As shown in the charts to the right, Mexico experienced a classic inflationary deleveraging cycle between 1979 and 1991.

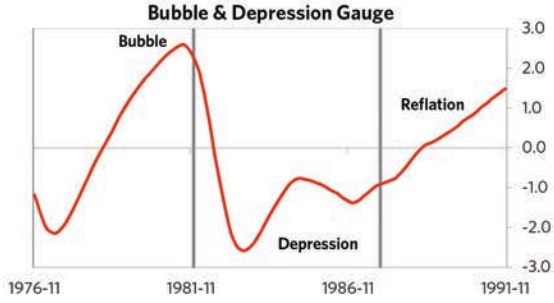
The Bubble Phase

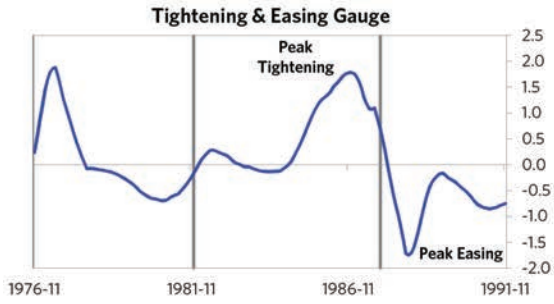
Between 1979 and 1981, Mexico experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt and strong growth. By the bubble's end, debts had reached a pre-crisis peak of 65% of GDP. In this case, a high share of the debt was in foreign currencies (26% of GDP)—leaving Mexico with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 8% of GDP, which helped to finance a current account deficit of 6% of GDP. Aided by that rising debt and capital, growth was strong (at 9%), while levels of economic activity were high (the GDP gap peaked at 9%). Competitiveness became an issue, as Mexico's real FX peaked at +30%. Taken together, these bubble pressures and Mexico's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

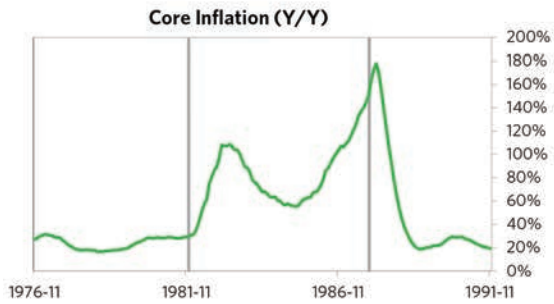
The Depression Phase

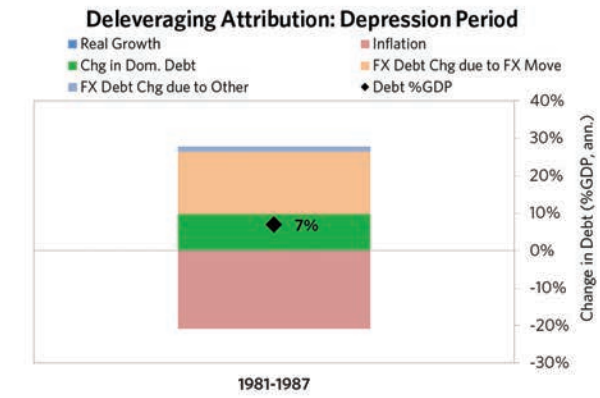
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1981 to 1987. At its pre-crisis peak, debt service reached 31% of GDP, making Mexico vulnerable to a shock—which came in the form of the 1980s Latin American Debt Crisis and falling oil prices. Mexico suffered a fall in foreign funding (with capital inflows falling by 17% of GDP), leading to a tightening (policy makers hiked short rates by 128%) and a meaningful decline in the currency (real FX fell by 74%)—which coincided with self-reinforcing declines in GDP (falling by 7%), and in stock prices (falling by 86%). In addition, currency weakness contributed to very high and rising inflation, peaking at 151% during the depression phase, which is high compared to other similar cases. That makes sense given that Mexico had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being their fiscal deficit). Mexico's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 66%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Mexico needed a deleveraging, its debt as a % GDP went up by 41% (7% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 13% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







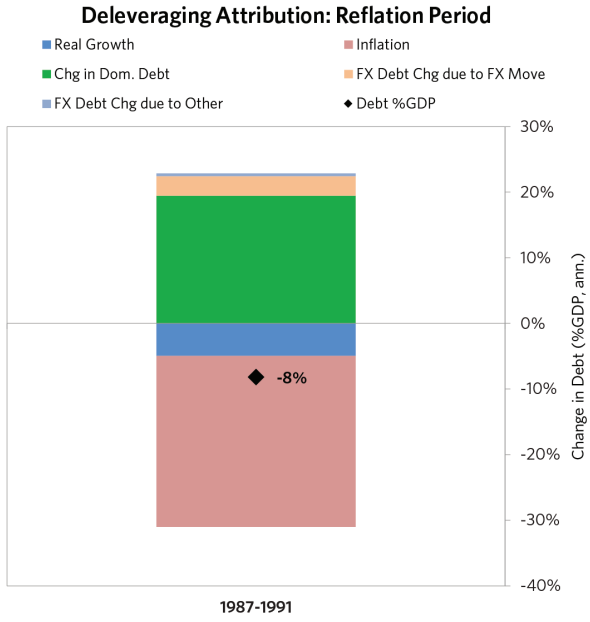


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Mexico 1979–1991 Case Auto-Summary (cont.)

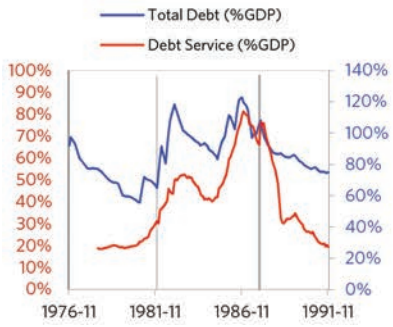
The Reflation Phase

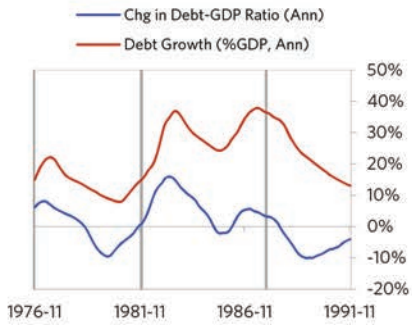
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a relatively long "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 10% of GDP), and make the currency more attractive to hold. Mexico was not aggressive in managing its financial institutions and bad debts, pulling 2 out of 9 classic policy levers. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 31% (8% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Mexico's now much lower currency (with real FX bottoming at -44% during the beautiful period) set up the country for renewed competitiveness. It took 7 years before real GDP reached its prior peak and equity prices in USD terms recovered within 6 years.



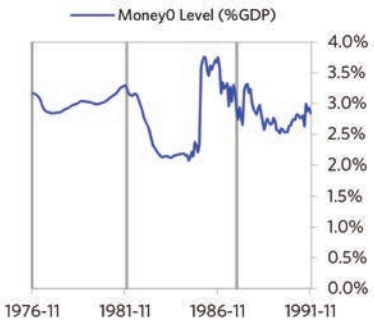
Mexico 1979–1991 Chart Deck Appendix

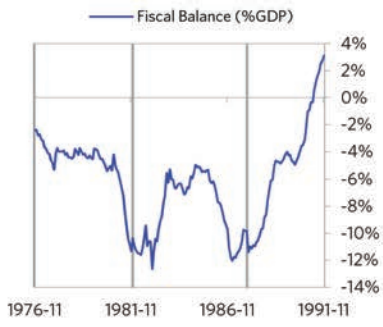
Indebtedness



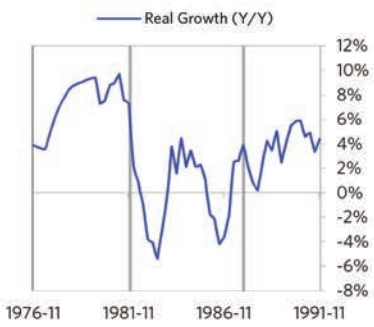


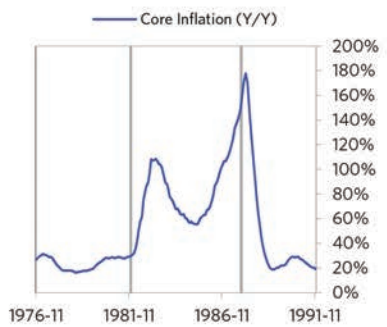
Monetary and Fiscal Policy

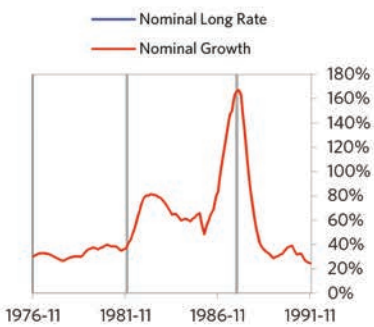




Economic Conditions

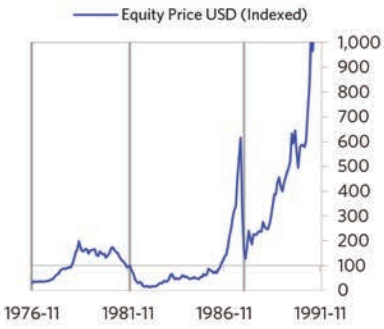


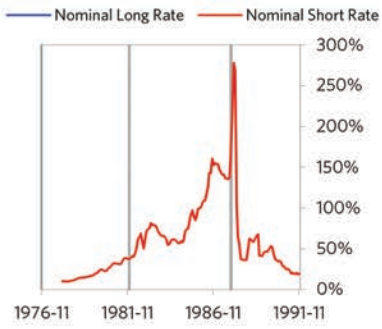


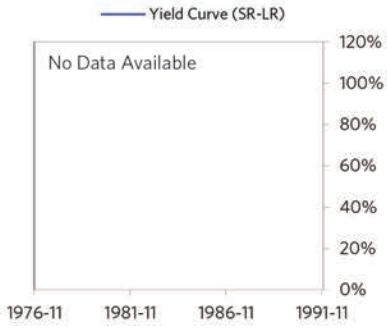


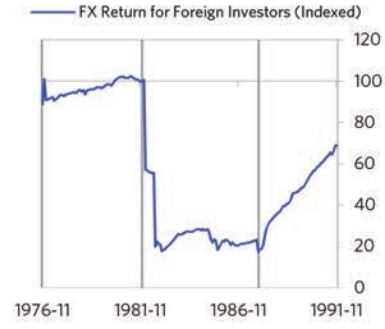
Mexico 1979–1991 Chart Deck Appendix (cont.)

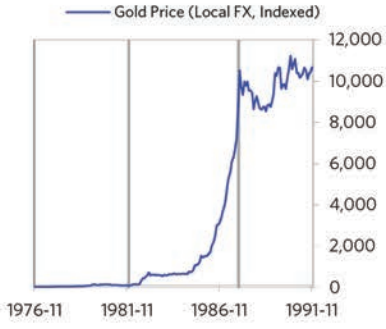
Markets



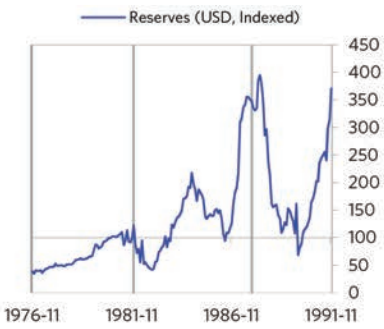


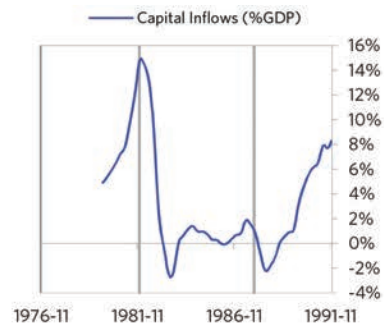


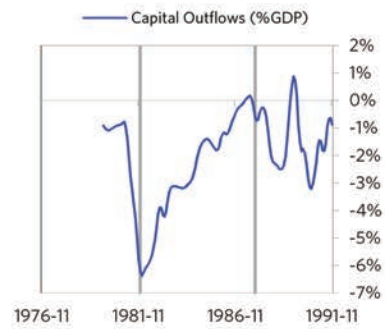




External Position







Peru 1980–1986 Case Auto-Summary

As shown in the charts to the right, Peru experienced a classic inflationary deleveraging cycle between 1980 and 1986.

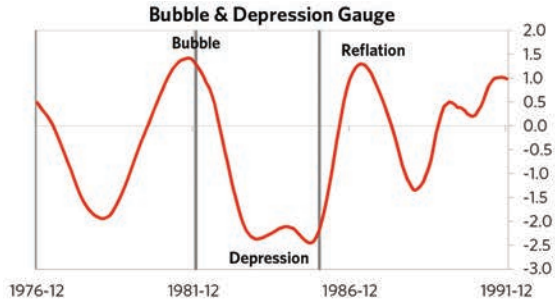
The Bubble Phase

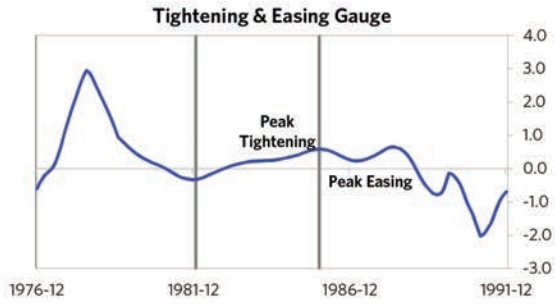
Unlike many other cases, Peru didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts reaching 107% of GDP prior to the crisis. In this case, a high share of the debt was in foreign currencies (106% of GDP)—leaving Peru with a large exposure to a pullback in foreign capital. Peru also became somewhat dependent on continuous foreign financing, running a current account deficit of 4%. Ultimately, these high debts and Peru's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

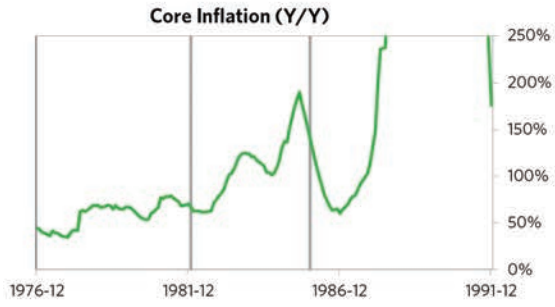
The Depression Phase

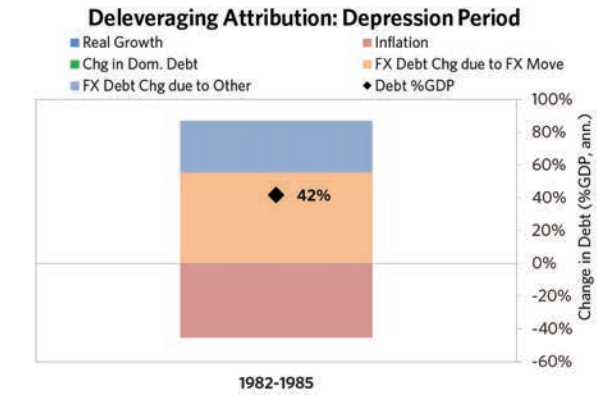
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1982 to 1985. High debt levels left Peru vulnerable to a shock—which came in the form of the 1980s Latin American Debt Crisis. Peru suffered from self-reinforcing declines in GDP (falling by 13%), and in stock prices (falling by 56%). Unemployment rates increased by 5%, while currency weakness contributed to very high and rising inflation, peaking at 190% during the depression phase, which is high compared to other similar cases. That makes sense given that Peru had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low real short rates). Peru's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 44%), though by the end policy makers had abandoned their currency defense and the currency had fallen by 53%. As shown in the attribution chart to the right, even though Peru needed a deleveraging, its debt as a % GDP went up by 163% (42% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









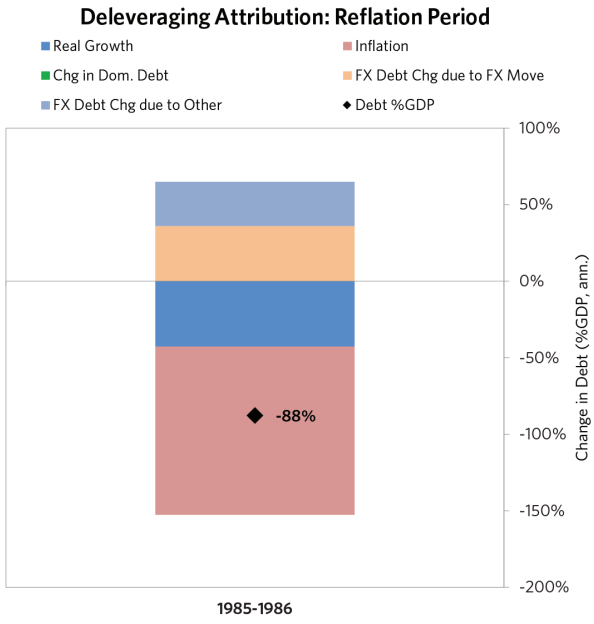
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Peru 1980–1986 Case Auto-Summary (cont.)

The Reflation Phase

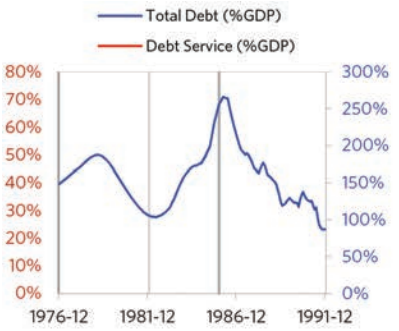
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly longer than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 13% of GDP), and make the currency more attractive to hold. Peru was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 88% (88% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Peru's now much lower currency (with real FX bottoming at -46% during the beautiful period) set up the country for renewed competitiveness. It took 4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 6 years.

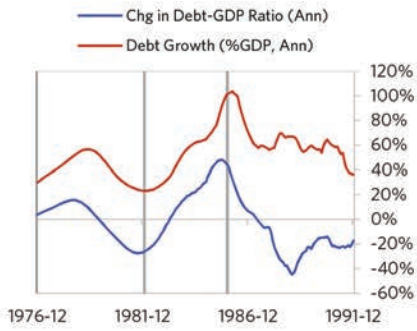
The crisis had a notable impact on the politics of Peru, as it helped set the stage for Alan Garcia Perez, whom many people consider a populist leader, to take power.



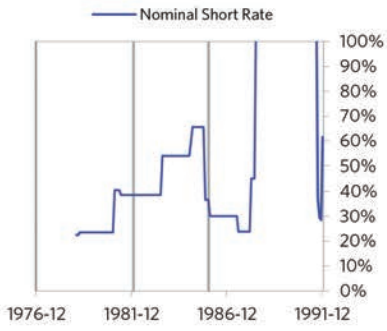
Peru 1980–1986 Chart Deck Appendix

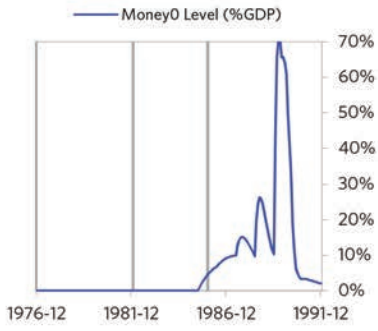
Indebtedness

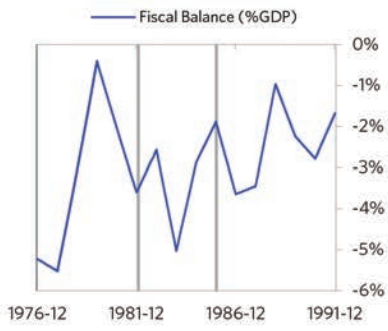




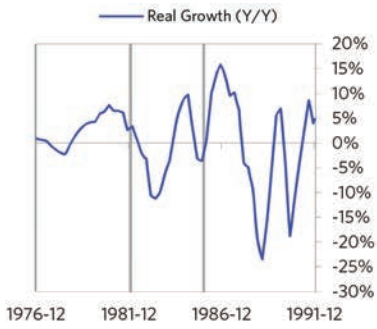
Monetary and Fiscal Policy

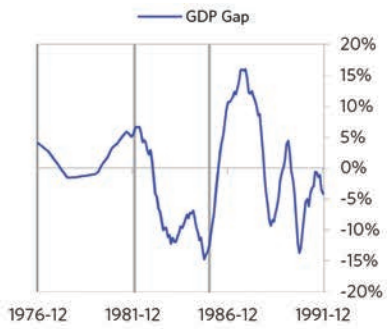


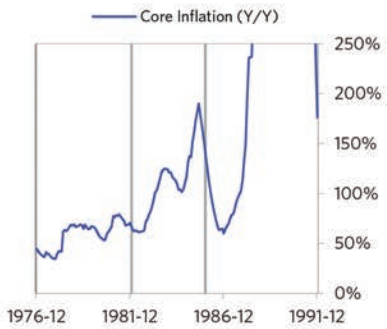


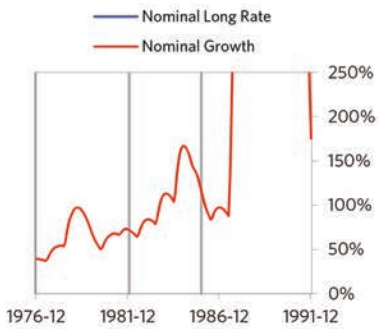


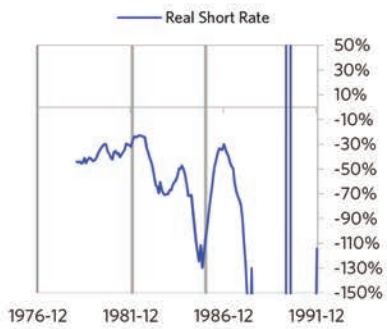
Economic Conditions





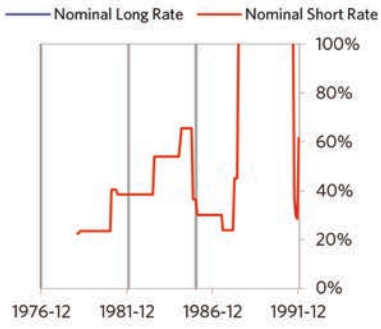


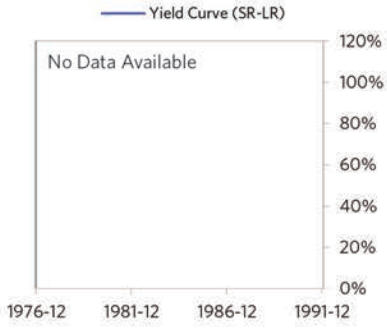


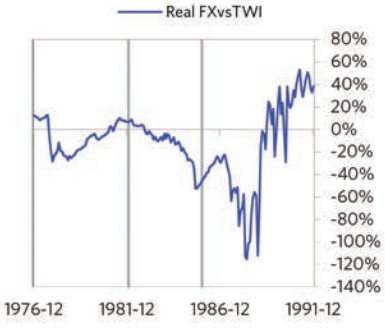


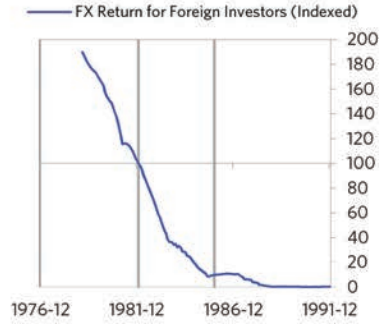
Peru 1980–1986 Chart Deck Appendix (cont.)

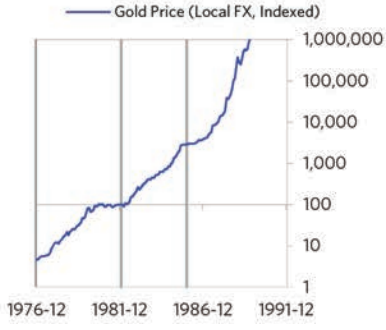
Markets



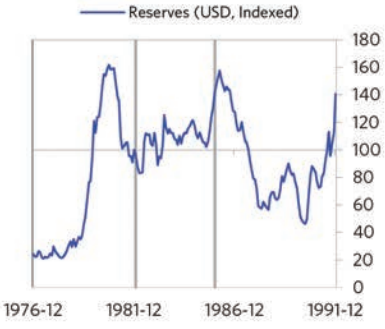


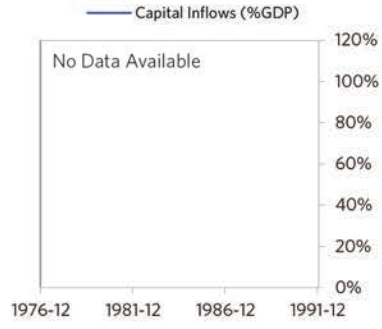


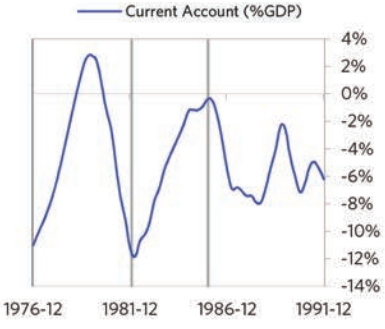


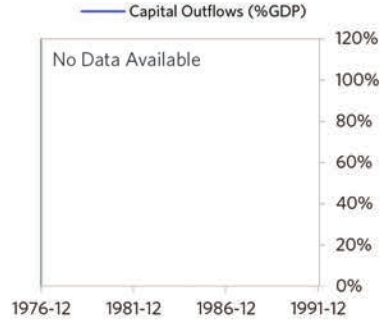


External Position









Philippines 1979–1992 Case Auto-Summary

As shown in the charts to the right, the Philippines experienced a transitory inflationary deleveraging cycle between 1979 and 1992. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

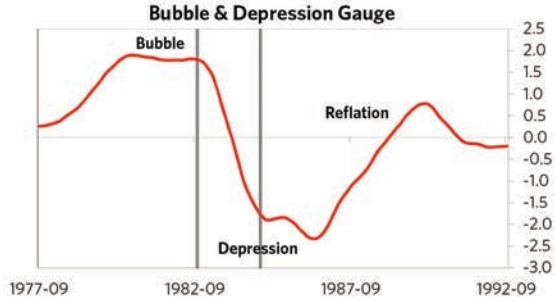
The Bubble Phase

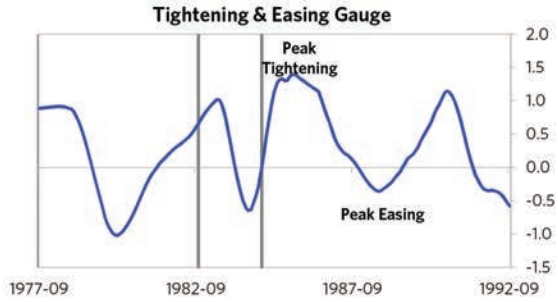
Between 1979 and 1982, the Philippines experienced a bubble that was most characterized by unsustainably strong capital inflows and strong currency returns. Debts rose by 16% of GDP during the bubble to a pre-crisis peak of 77% of GDP. In this case, a high share of the debt was in foreign currencies (56% of GDP)—leaving the Philippines with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 9% of GDP, which helped to finance a current account deficit of 7% of GDP. Aided by that rising debt and capital, growth was strong (at 4%), while levels of economic activity were high (the GDP gap peaked at 9%). Competitiveness became an issue, as the Philippines's real FX peaked at +18%. Taken together, these bubble pressures and the Philippines's dependence on foreign financing created an unsustainable situation.

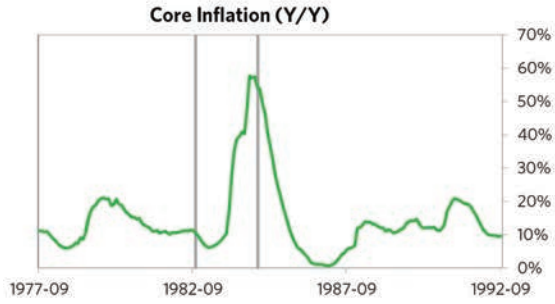
The Depression Phase

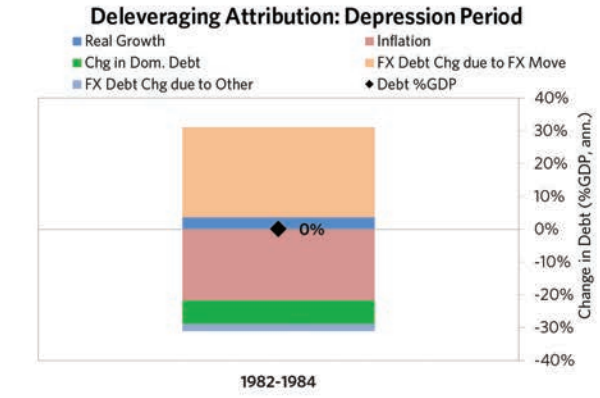
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1982 to 1984. High debt levels left the Philippines vulnerable to a shock—which came in the form of rapidly declining commodity prices and political violence. The Philippines suffered a fall in foreign funding (with capital inflows falling by 9% of GDP), leading to a tightening (policy makers hiked short rates by 34%) and a meaningful decline in the currency (real FX fell by 16%)—which coincided with self-reinforcing declines in GDP (falling by 11%), and in stock prices (falling by 71%). In addition, currency weakness contributed to high and rising inflation, peaking at 58% during the depression phase, which is normal compared to other similar cases. That makes sense given that the Philippines had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being high foreign-denominated debts). The Philippines's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 100%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though the Philippines needed a deleveraging, its debt as a % GDP was roughly flat through this period.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







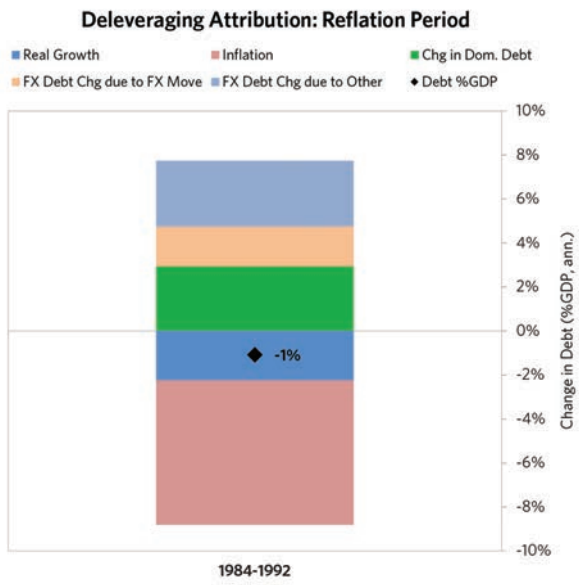


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Philippines 1979–1992 Case Auto-Summary (cont.)

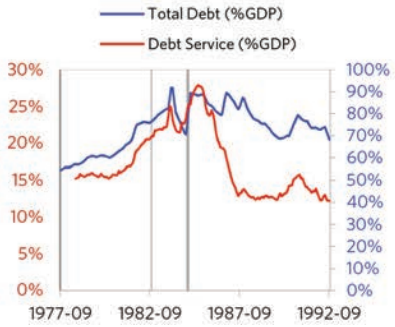
The Reflation Phase

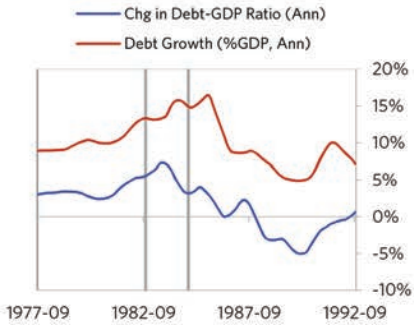
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 7% of GDP), and make the currency more attractive to hold. The Philippines was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 9% (1% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, the Philippines's now lower currency (with real FX bottoming at -19% during the beautiful period) set up the country for renewed competitiveness. It took 6 years before real GDP reached its prior peak and equity prices in USD terms recovered within 5 years.



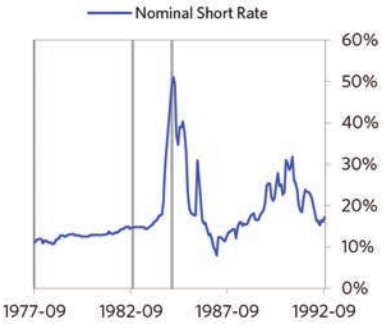
Philippines 1979–1992 Chart Deck Appendix

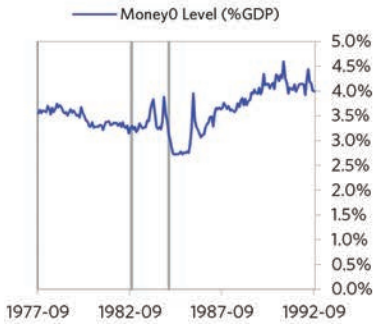
Indebtedness

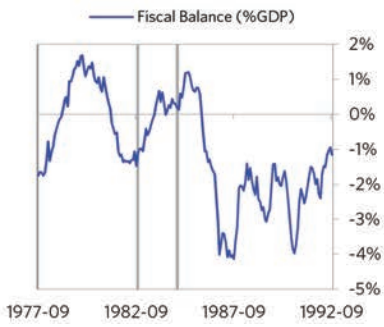




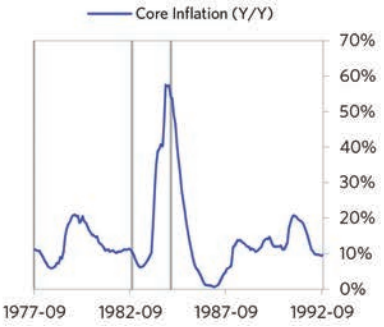
Monetary and Fiscal Policy

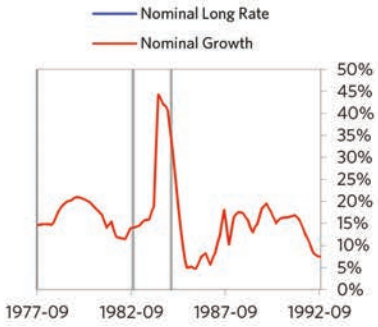






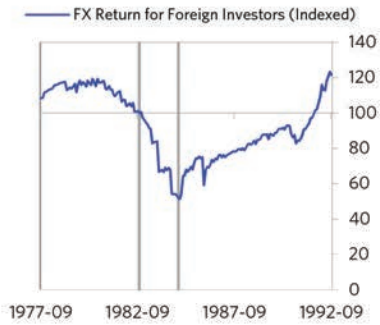
Economic Conditions



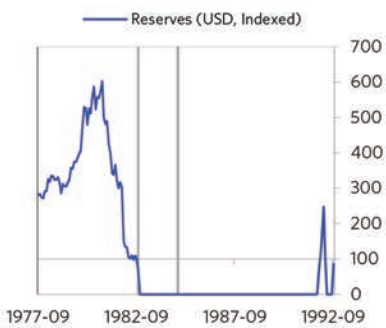


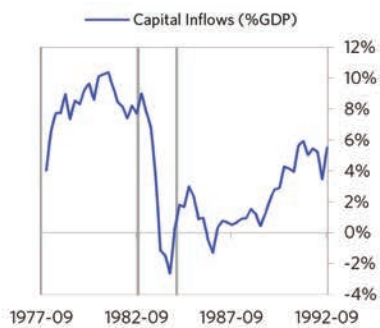
Philippines 1979–1992 Chart Deck Appendix (cont.)

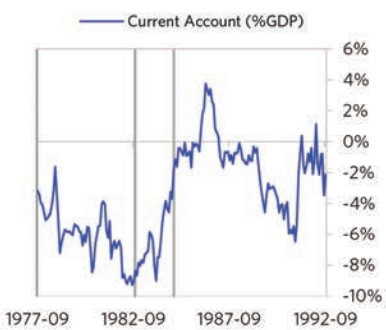
Markets

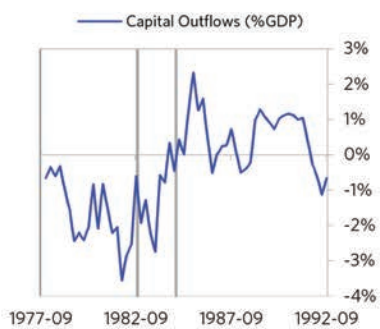


External Position









Malaysia 1981–1990 Case Auto-Summary

As shown in the charts to the right, Malaysia experienced a transitory inflationary deleveraging cycle between 1981 and 1990. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

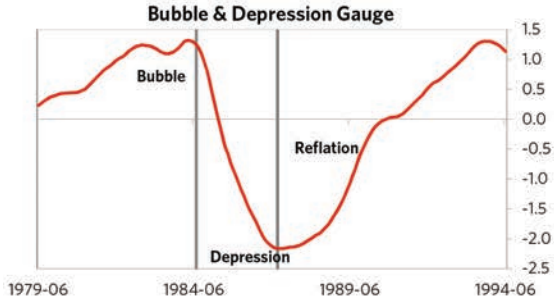
The Bubble Phase

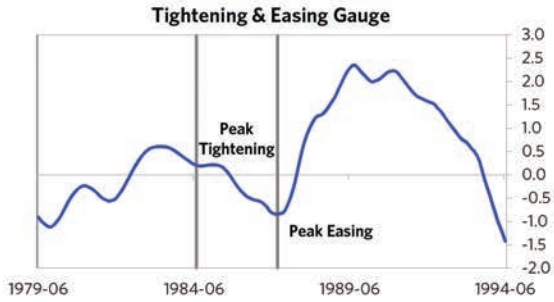
Between 1981 and 1984, Malaysia experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt and strong growth. Debts rose by 40% of GDP during the bubble to a pre-crisis peak of 153% of GDP. In this case, a high share of the debt was in foreign currencies (42% of GDP)—leaving Malaysia with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 14% of GDP, which helped to finance a current account deficit of 10% of GDP. Aided by that rising debt and capital, growth was strong (at 7%), while levels of economic activity were high (the GDP gap peaked at 3%). Competitiveness became an issue, as Malaysia's real FX peaked at +20%. Taken together, these bubble pressures and Malaysia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

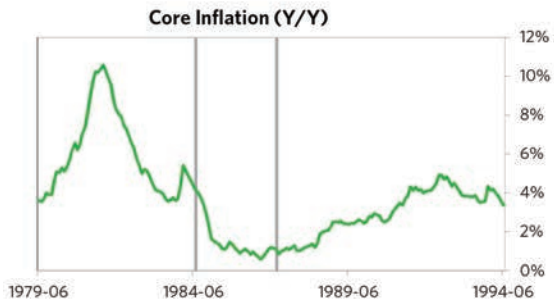
The Depression Phase

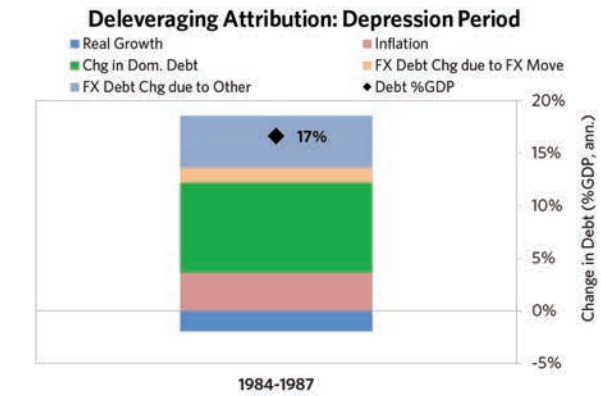
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1984 to 1987. High debt levels left Malaysia vulnerable to a shock—which came in the form of commodity price declines hitting exports. Malaysia suffered a fall in foreign funding (with capital inflows falling by 11% of GDP), leading to a meaningful decline in the currency (real FX fell by 19%)—which coincided with self-reinforcing declines in stock prices (falling by 56%). Unemployment rates increased by 2%. Malaysia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 26%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Malaysia needed a deleveraging, its debt as a % GDP went up by 43% (17% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 10% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







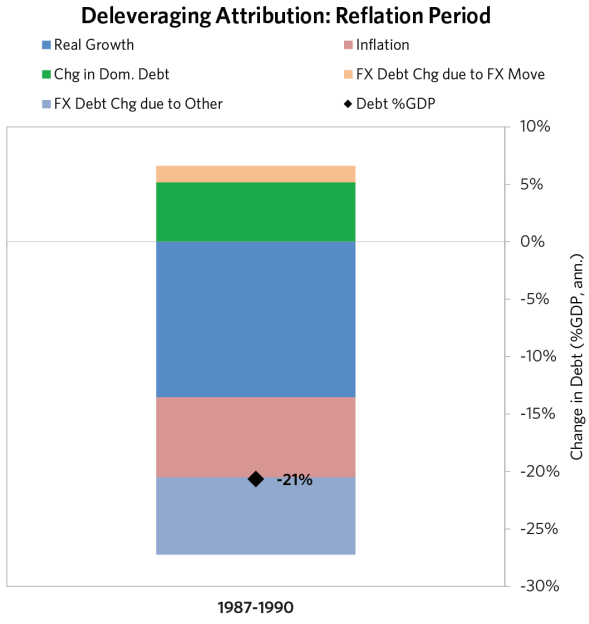


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Malaysia 1981–1990 Case Auto-Summary (cont.)

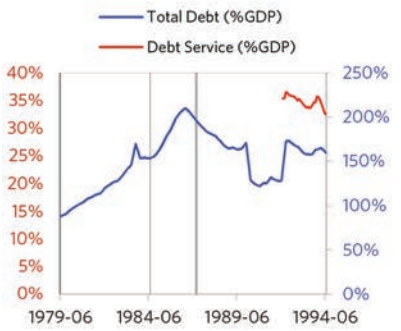
The Reflation Phase

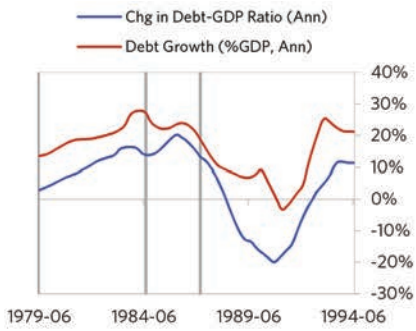
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 9% of GDP), and make the currency more attractive to hold. Malaysia was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. As shown in the attribution chart to the right, debt as a % of GDP fell by 74% (21% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising, driven primarily by higher real growth. Meanwhile, Malaysia's now lower currency (with real FX bottoming at -12% during the beautiful period) set up the country for renewed competitiveness. It took 1.8 years before real GDP reached its prior peak and equity prices in USD terms recovered within 6 years.



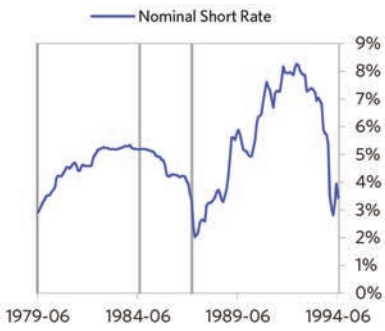
Malaysia 1981–1990 Chart Deck Appendix

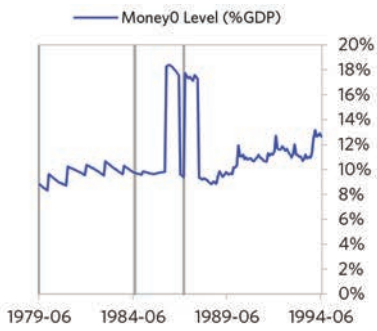
Indebtedness

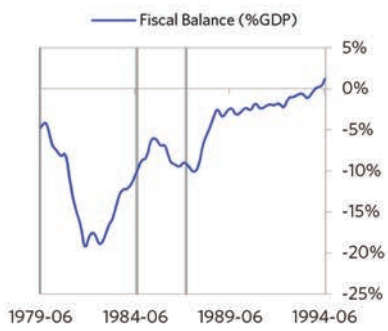




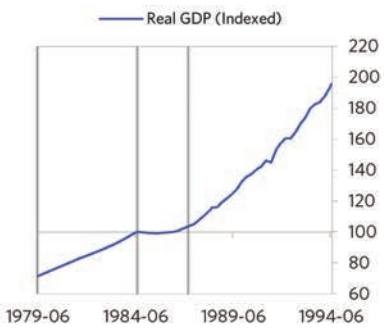
Monetary and Fiscal Policy

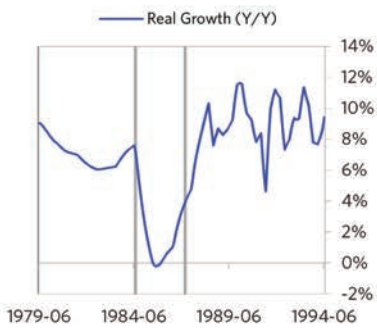


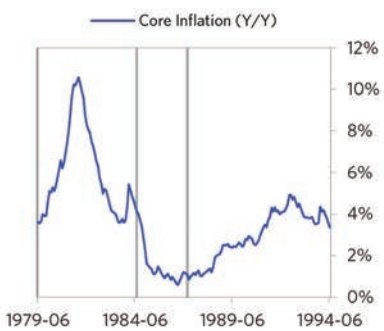


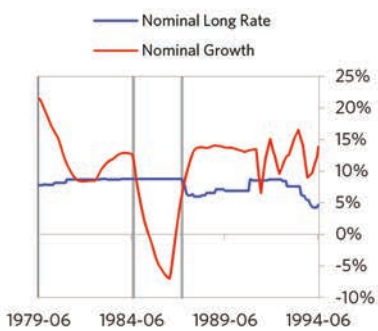


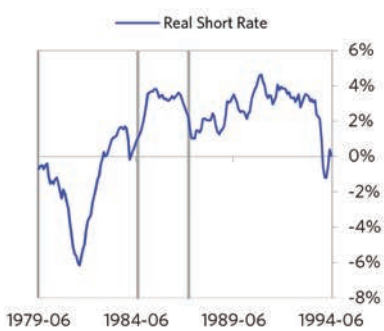
Economic Conditions





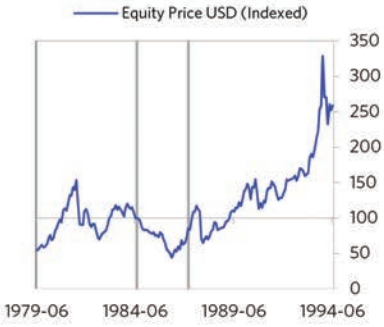


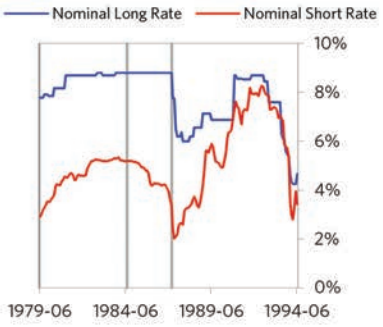


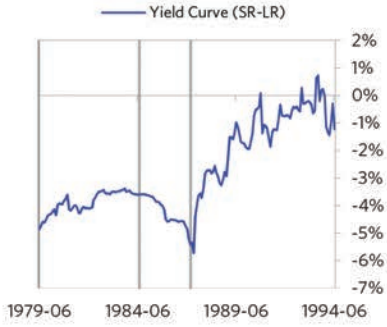


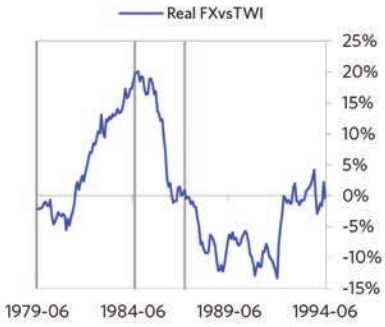
Malaysia 1981–1990 Chart Deck Appendix (cont.)

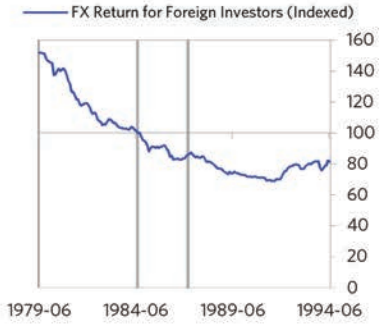
Markets



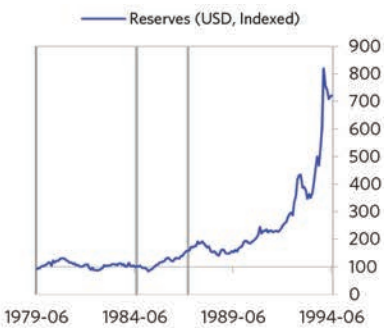


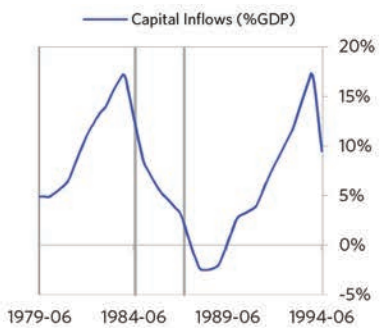


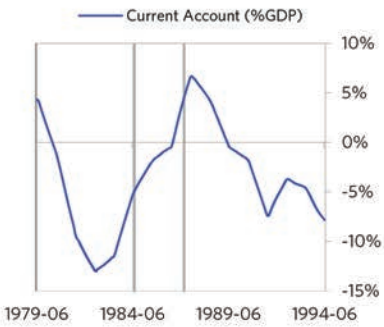


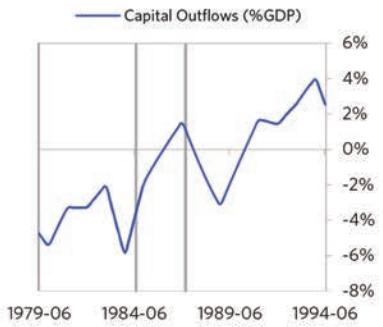


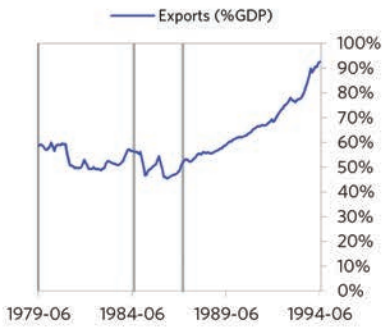
External Position











Peru 1986–1995 Case Auto-Summary

As shown in the charts to the right, Peru experienced a classic hyperinflationary deleveraging cycle between 1986 and 1995.

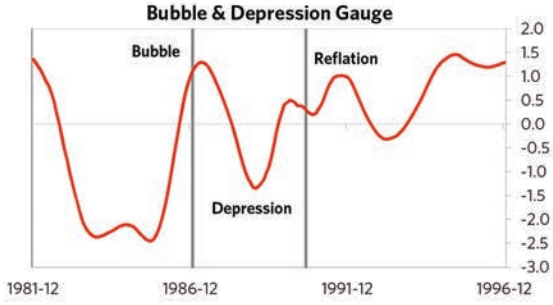
The Bubble Phase

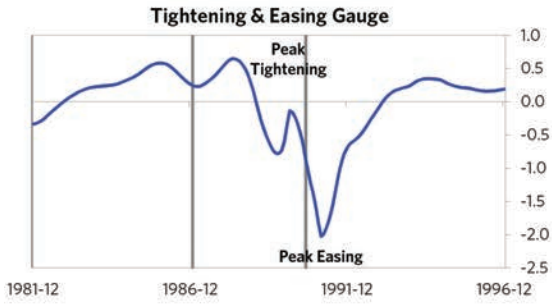
Between 1986 and 1987, Peru experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 55% of GDP during the bubble to a pre-crisis peak of 184% of GDP. In this case, a high share of the debt was in foreign currencies (182% of GDP)—leaving Peru with a large exposure to a pullback in foreign capital. Peru maintained a current account deficit of 3% of GDP. Aided by that rising debt, growth was strong (at 5%), while levels of economic activity were high (the GDP gap peaked at 11%). Furthermore, strong asset returns (equities averaged 124% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Peru's dependence on foreign financing created an unsustainable situation.

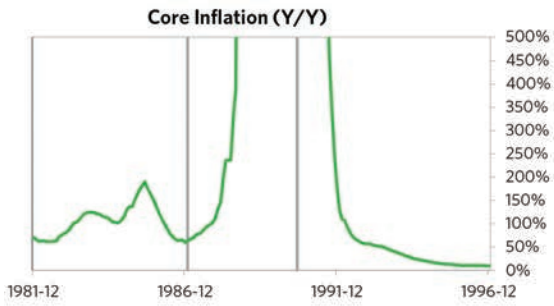
The Depression Phase

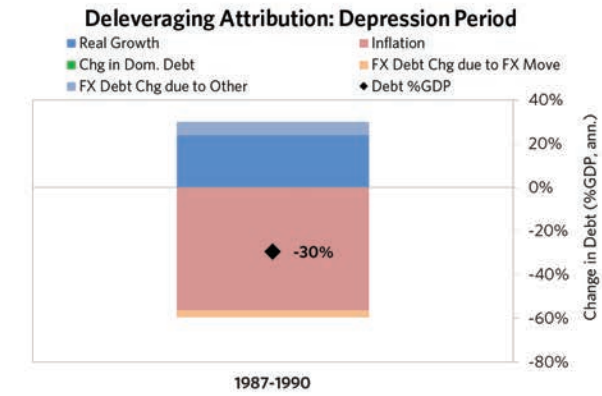
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1987 to 1990. High debt levels left Peru vulnerable to a shock—which came in the form of Peru's leadership not being willing to cooperate with international creditors. Peru suffered from self-reinforcing declines in GDP (falling by 30%), and in stock prices (falling by 91%). Peru's financial institutions also came under considerable pressure. Though it was caught in an ugly deleveraging, Peru nevertheless managed to reduce its debt as a %GDP by 106% (30% annualized) through this period (as shown in the attribution chart to the right). The reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher inflation.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







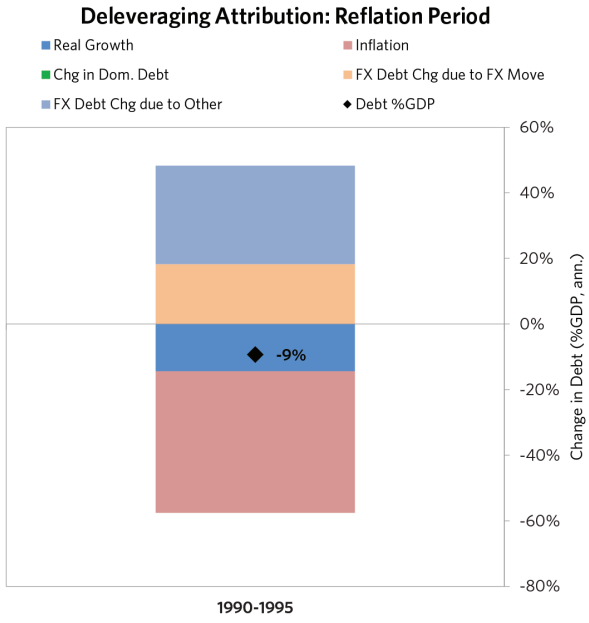


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Peru 1986–1995 Case Auto-Summary (cont.)

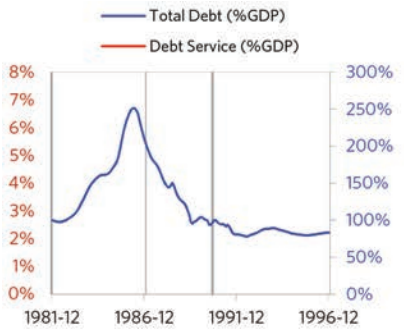
The Reflation Phase

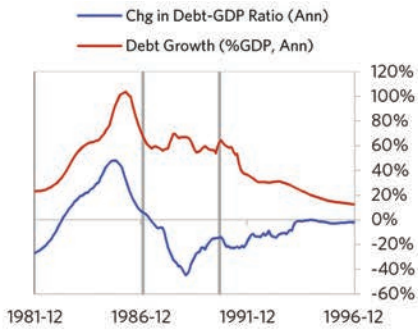
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Real FX bottomed at -115% and inflation peaked at over 10,000%. That makes sense given that Peru had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low real short rates). Peru was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 typical policy levers. In particular, it nationalized banks and provided liquidity. It also enacted structural reforms designed to increase labor market flexibility. But, as is classic, stopping the inflationary spiral ultimately required Peru to make more significant structural changes, including abandoning the hyperinflated inti and adopting the sol in 1991. It took 9 years before real GDP reached its prior peak.



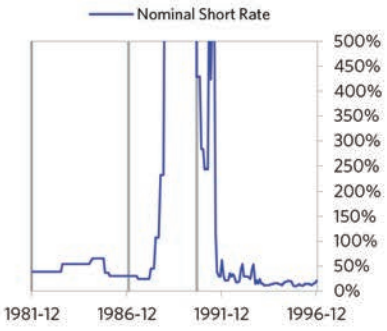
Peru 1986–1995 Chart Deck Appendix

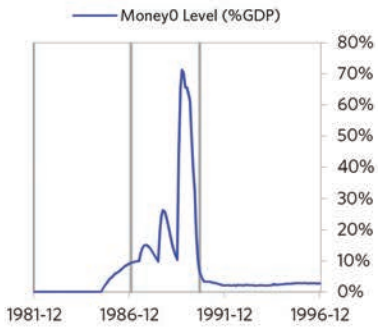
Indebtedness

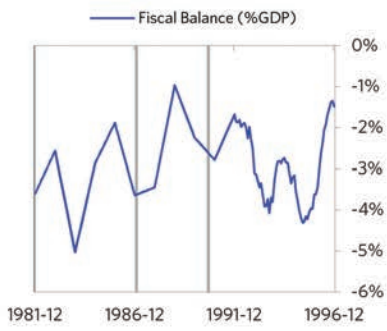




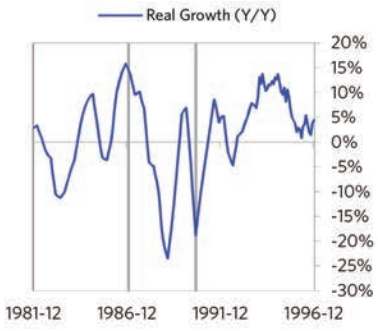
Monetary and Fiscal Policy

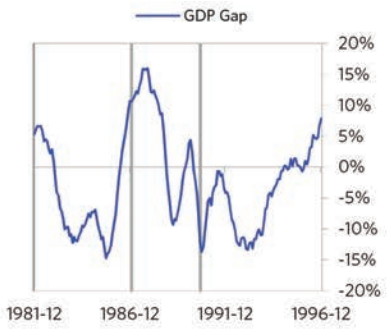


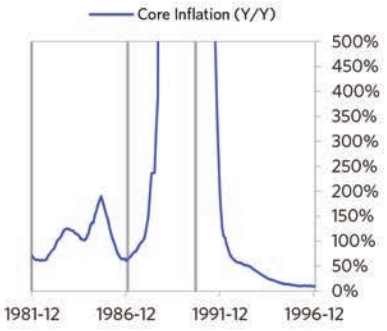


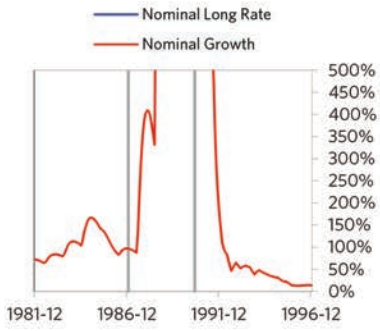


Economic Conditions



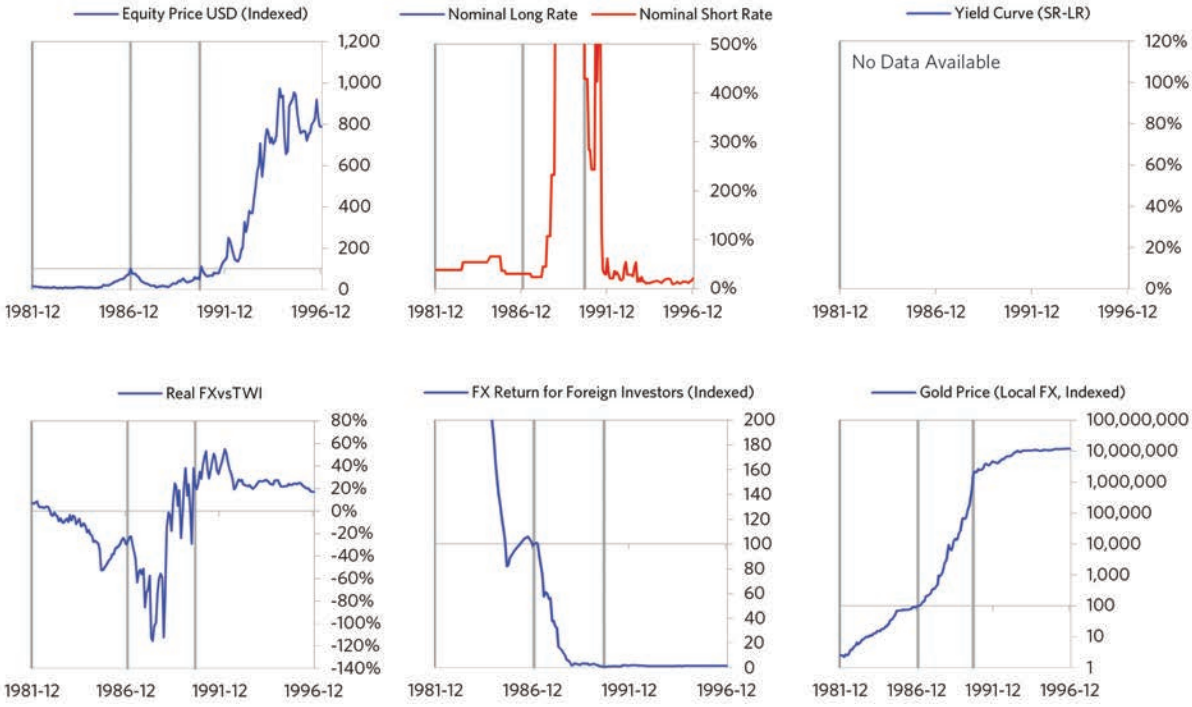




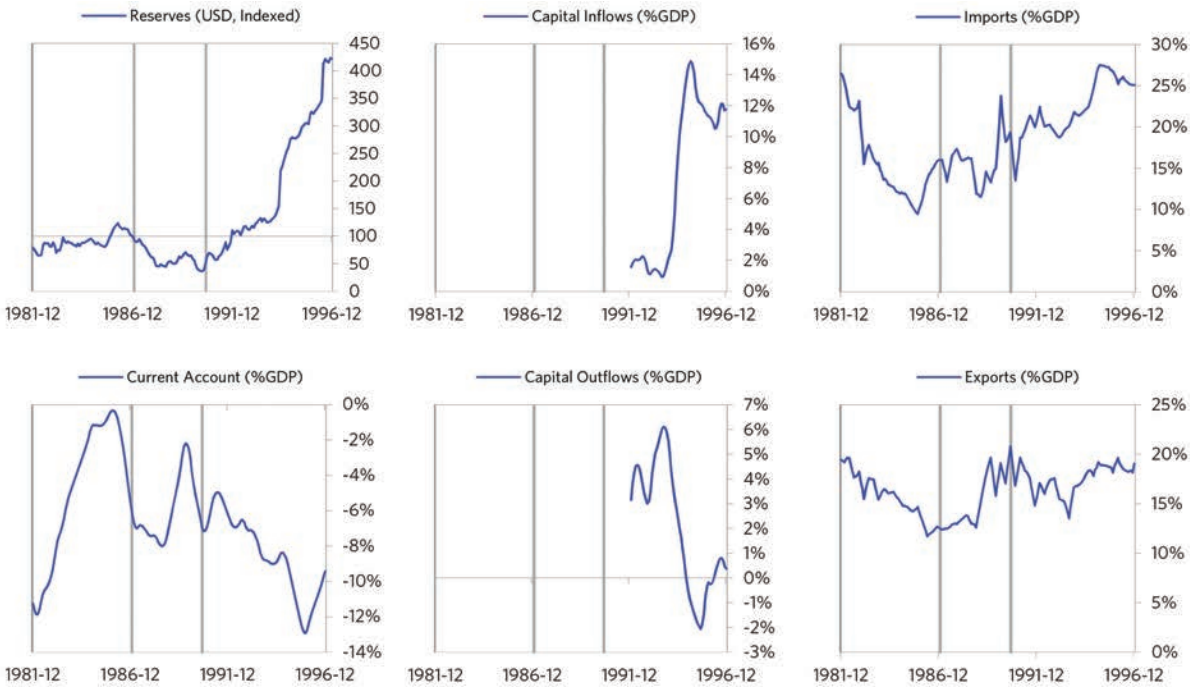


Peru 1986–1995 Chart Deck Appendix (cont.)

Markets



External Position



Argentina 1987–1993 Case Auto-Summary

As shown in the charts to the right, Argentina experienced a classic hyperinflationary deleveraging cycle between 1987 and 1993.

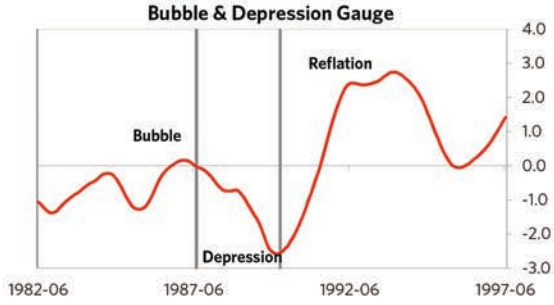
The Bubble Phase

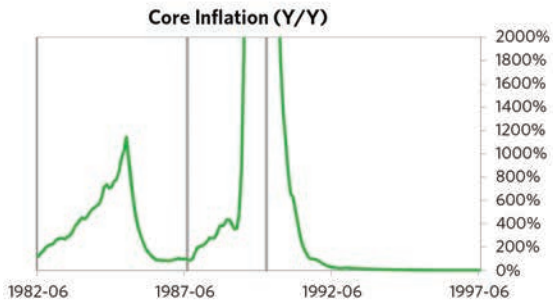
Unlike many other cases, Argentina didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts rising by 15% of GDP to a pre-crisis peak of 70% of GDP during a period of leveraging up. In this case, a high share of the debt was in foreign currencies (39% of GDP)—leaving Argentina with a large exposure to a pullback in foreign capital. Ultimately, these high debts, combined with structural weaknesses in the economy, created an unsustainable situation.

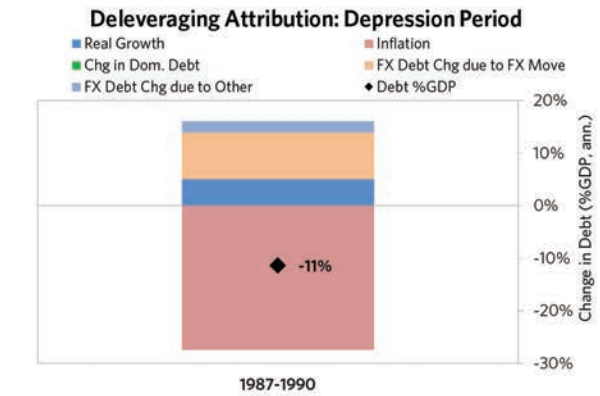
The Depression Phase

Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1987 to 1990. High debt levels left Argentina vulnerable to a shock—which came in the form of commodity price declines hitting exports. Argentina suffered a fall in foreign funding (with capital inflows falling by 4% of GDP), leading to a tightening (policy makers hiked short rates by more than 250%) and a meaningful decline in the currency (real FX fell by 60%)—which coincided with self-reinforcing declines in GDP (falling by 16%), and in stock prices (falling by 33%). Unemployment rates increased by 3%, while currency weakness contributed to very high and rising inflation. Argentina's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 26%), though it eventually abandoned its currency defense. Though it was caught in an ugly deleveraging, Argentina nevertheless managed to reduce its debt as a %GDP by 30% (11% annualized) through this period (as shown in the attribution chart to the right). The reduction in debt-to-income ratios came mostly from income rising, driven primarily by higher inflation.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







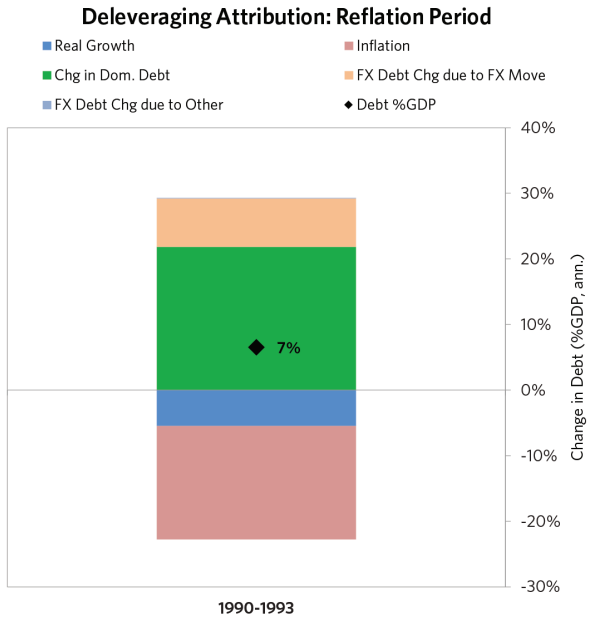
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Argentina 1987–1993 Case Auto-Summary (cont.)

The Reflation Phase

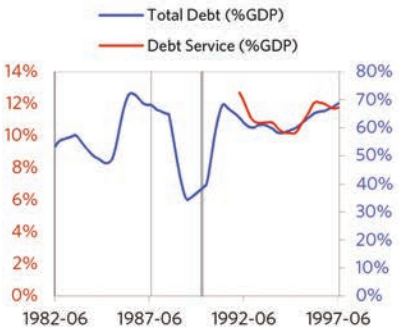
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Real FX bottomed at -135% and inflation peaked at over 10,000%. That makes sense given that Argentina had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Argentina was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 typical policy levers. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. But, as is classic, stopping the inflationary spiral ultimately required Argentina to make more significant structural changes, including abandoning the hyperinflated austral and adopting the current Argentine peso, which was initially pegged to the US dollar. It took 4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 2 years.

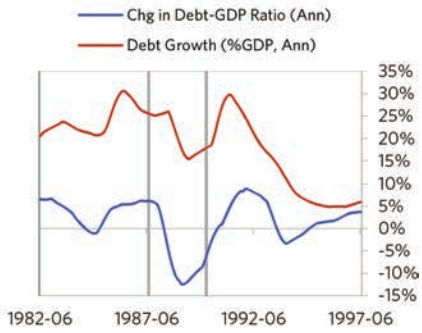
The crisis had a notable impact on the politics of Argentina, as it helped set the stage for Carlos Menem, whom many people consider a populist leader, to take power.



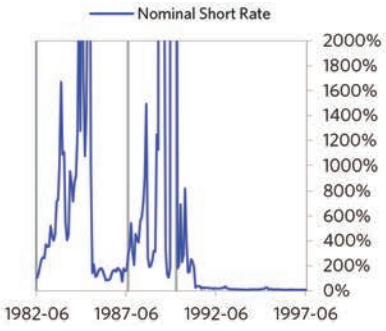
Argentina 1987–1993 Chart Deck Appendix

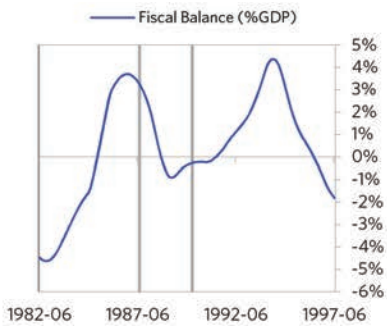
Indebtedness



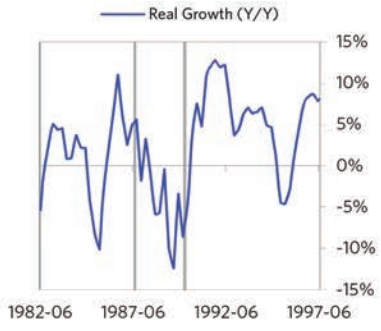


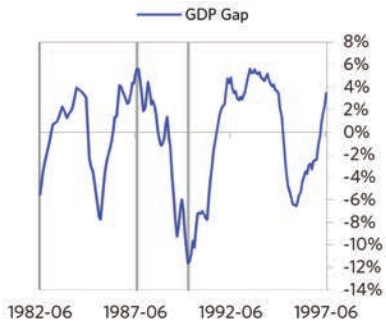
Monetary and Fiscal Policy

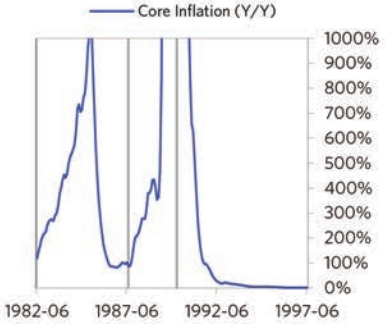


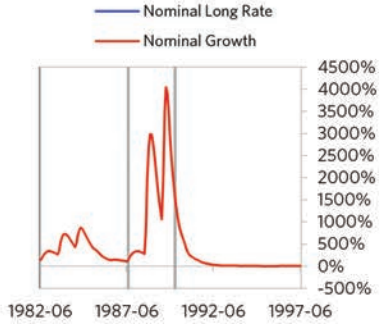


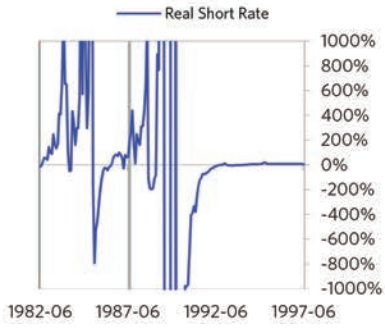
Economic Conditions





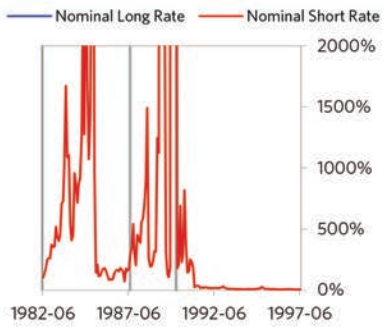


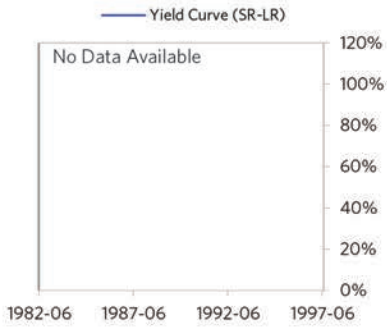


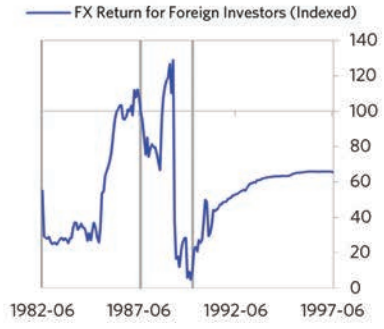


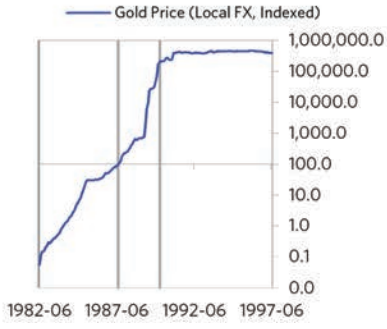
Argentina 1987–1993 Chart Deck Appendix (cont.)

Markets

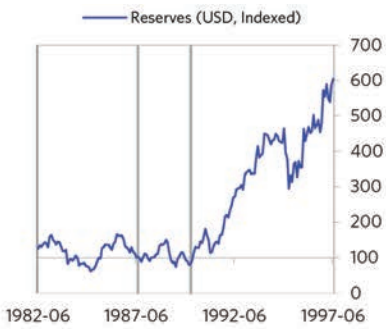


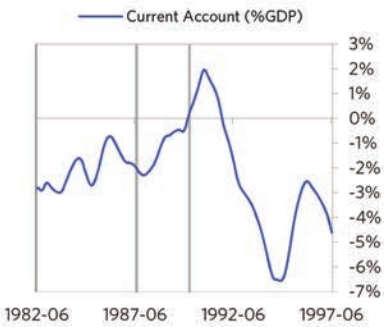


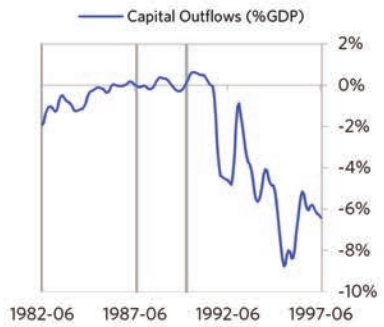




External Position







Brazil 1987–1995 Case Auto-Summary

As shown in the charts to the right, Brazil experienced a classic hyperinflationary deleveraging cycle between 1987 and 1995.

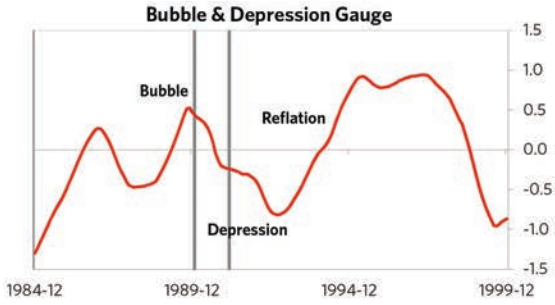
The Bubble Phase

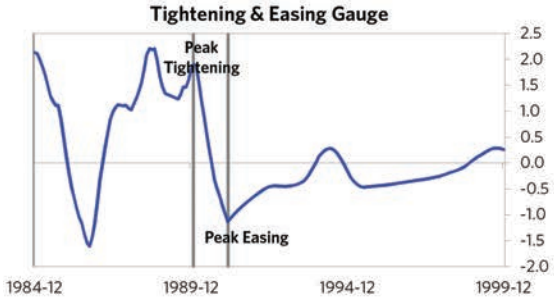
Between 1987 and 1990, Brazil experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 69% of GDP during the bubble to a pre-crisis peak of 177% of GDP. In this case, a high share of the debt was in foreign currencies (26% of GDP)—leaving Brazil with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were low, averaging around -3% of GDP. Aided by that rising debt, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 7%). Furthermore, strong asset returns (equities averaged 16% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Competitiveness became an issue, as Brazil's real FX peaked at +35%. Taken together, these bubble pressures, combined with the weakened conditions of related countries, created an unsustainable situation.

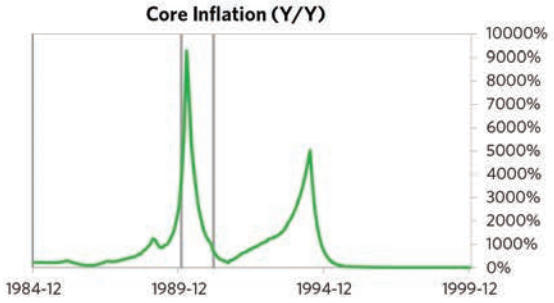
The Depression Phase

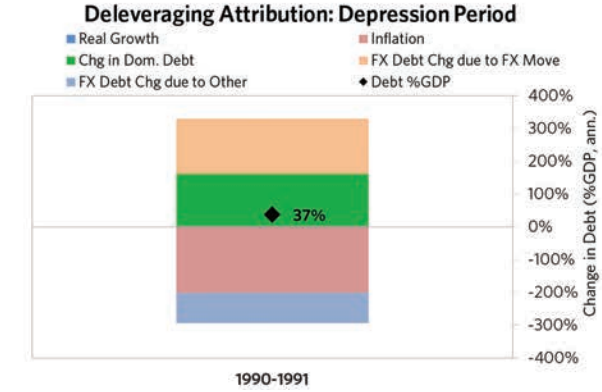
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1990 to 1991. High debt levels left Brazil vulnerable to a shock—which came in the form of a collapse of price control regulations and an inflation shock. Brazil suffered from self-reinforcing declines in GDP (falling by 7%), and in stock prices (falling by 70%). Unemployment rates increased by 4%, while currency weakness contributed to very high inflation. Brazil's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 28%), though by the end policy makers had abandoned their currency defense and the currency had fallen by 19%. As shown in the attribution chart to the right, even though Brazil needed a deleveraging, its debt as a % GDP went up by 40% (37% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 19% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







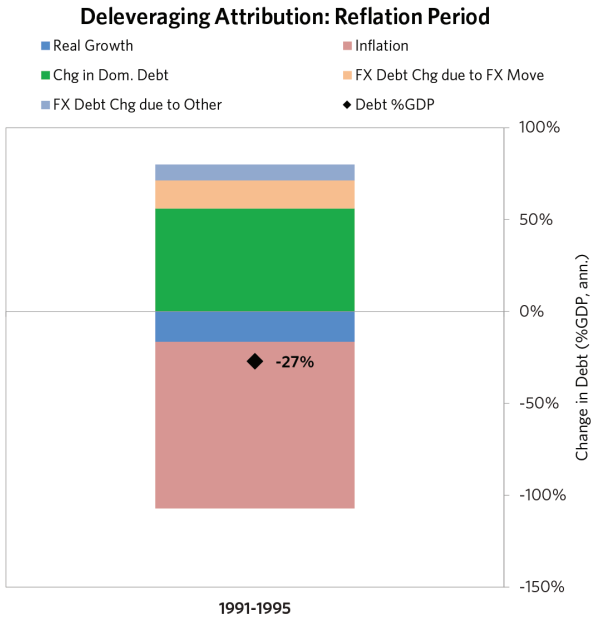


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Brazil 1987–1995 Case Auto-Summary (cont.)

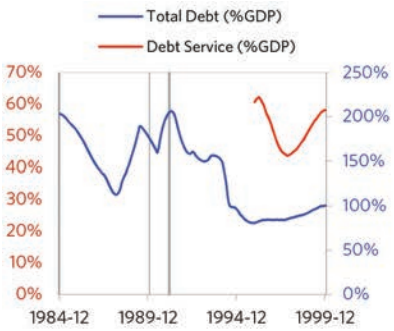
The Reflation Phase

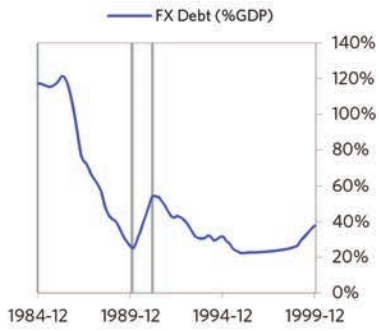
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Real FX bottomed at -16% and inflation peaked at over 5,000%. That makes sense given that Brazil had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Brazil was not aggressive in managing its financial institutions and bad debts, pulling 2 out of 9 typical policy levers. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. But, as is classic, stopping the inflationary spiral ultimately required Brazil to make more significant structural changes, including abandoning the hyperinflated cruzado and adopting first the cruzeiro and then the modern real in 1994. It took 1.4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 3 years.

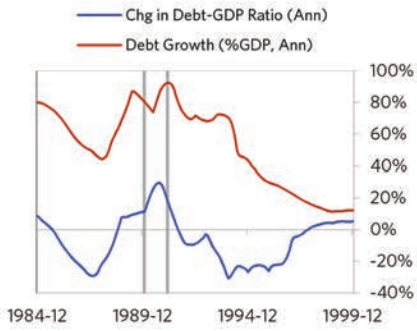


Brazil 1987–1995 Chart Deck Appendix

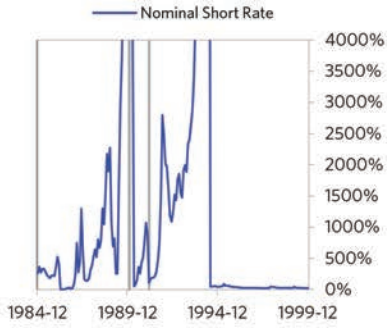
Indebtedness

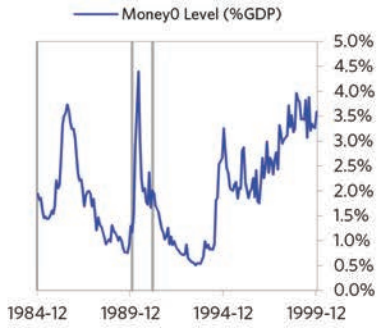


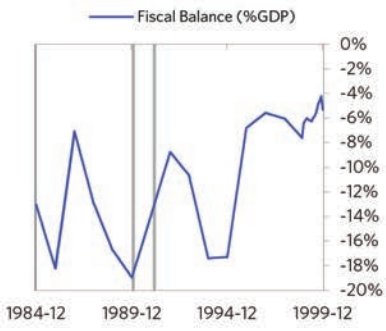




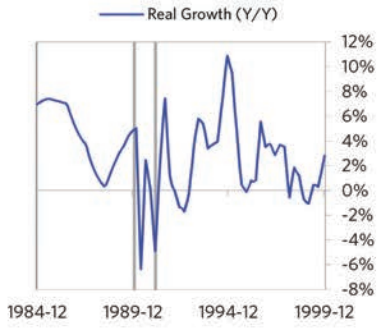
Monetary and Fiscal Policy

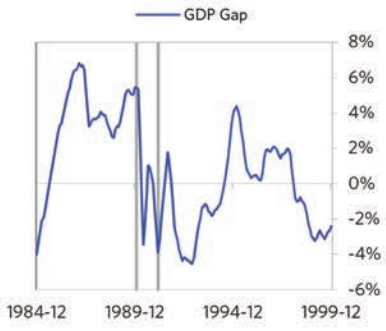


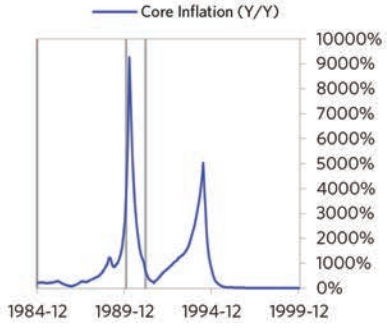


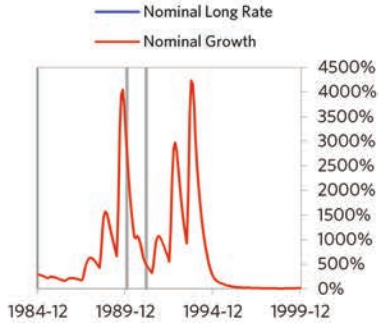


Economic Conditions



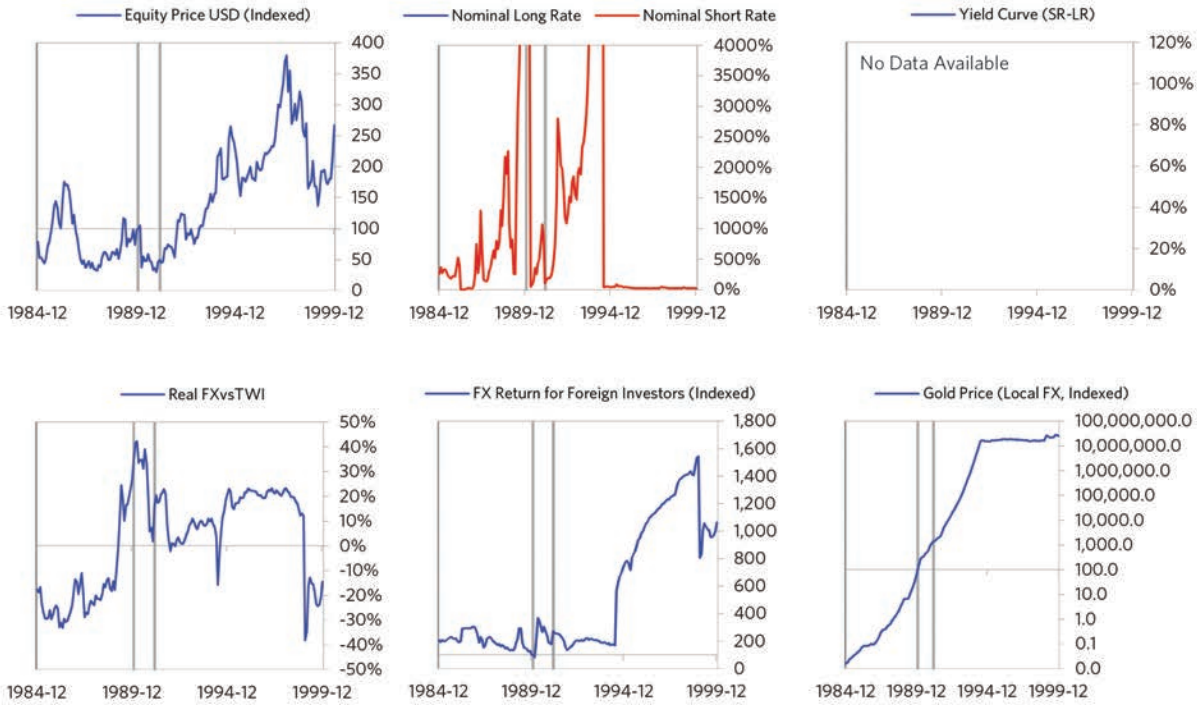




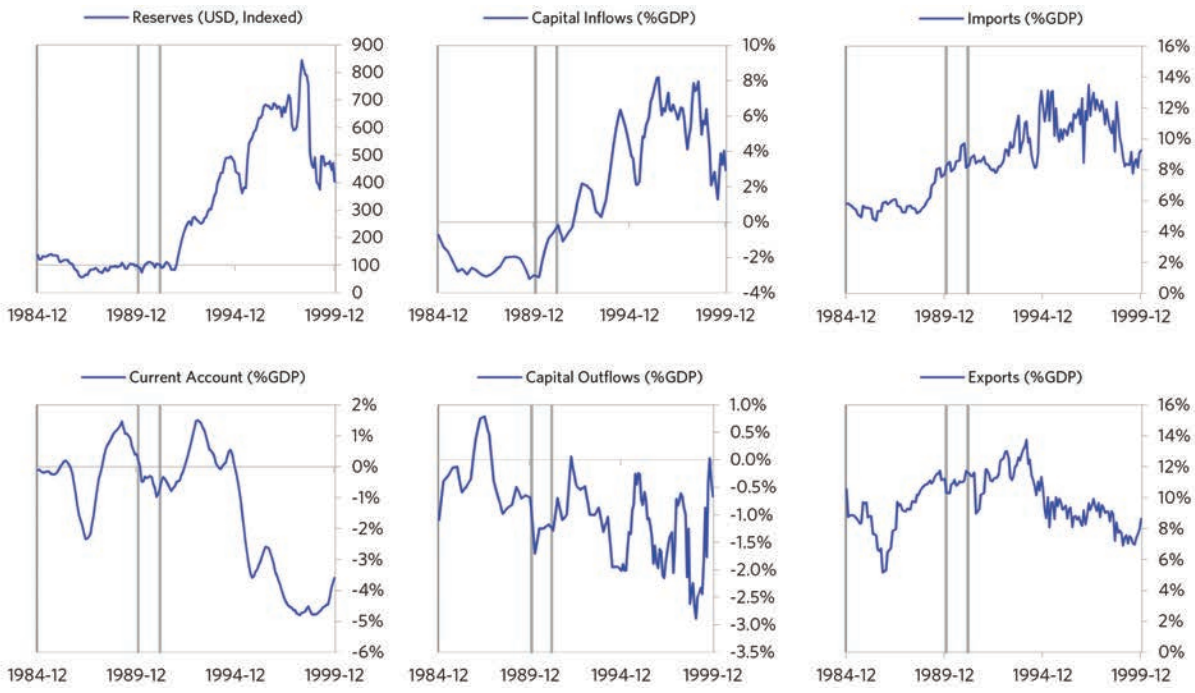


Brazil 1987–1995 Chart Deck Appendix (cont.)

Markets



External Position



Turkey 1990–1995 Case Auto-Summary

As shown in the charts to the right, Turkey experienced a classic inflationary deleveraging cycle between 1990 and 1995.

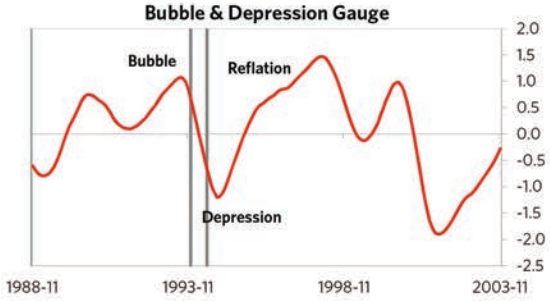
The Bubble Phase

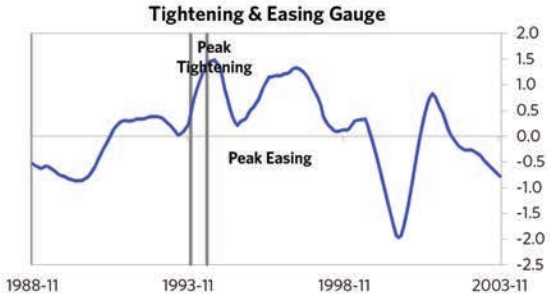
Unlike many other cases, Turkey didn't experience a broad-based bubble in the years before the crisis, but it did build up a substantial debt stock, with debts reaching 41% of GDP prior to the crisis. In this case, a high share of the debt was in foreign currencies (26% of GDP)—leaving Turkey with a large exposure to a pullback in foreign capital. Turkey also became somewhat dependent on continuous foreign financing, with investment inflows averaging 2% in the years before the crisis. Ultimately, these high debts and Turkey's dependence on foreign financing created an unsustainable situation.

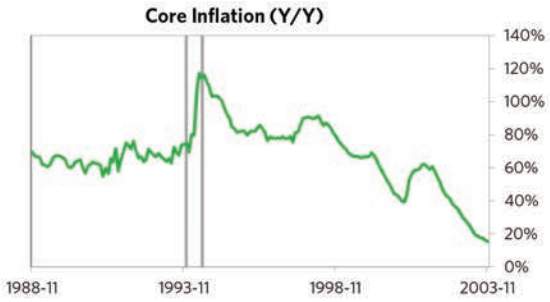
The Depression Phase

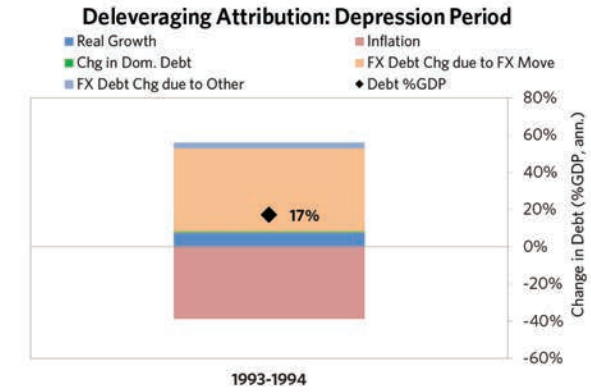
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1993 to 1994. High debt levels left Turkey vulnerable to a shock—which came in the form of moves by the government to undermine central bank independence. Turkey suffered a fall in foreign funding (with capital inflows falling by 8% of GDP), leading to a tightening (policy makers hiked short rates by 203%) and a meaningful decline in the currency (real FX fell by 26%)—which coincided with self-reinforcing declines in GDP (falling by 12%), and in stock prices (falling by 70%). In addition, currency weakness contributed to very high and rising inflation, peaking at 117% during the depression phase, which is high compared to other similar cases. That's true despite the fact that Turkey had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Turkey's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 99%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Turkey needed a deleveraging, its debt as a % GDP went up by 9% (17% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







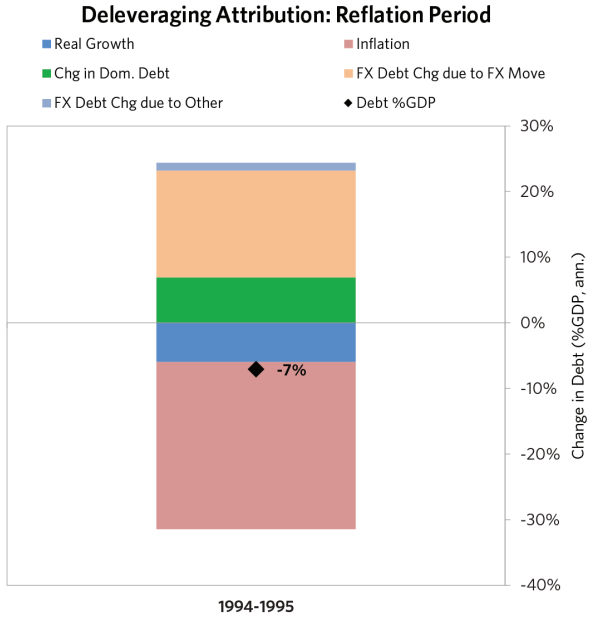


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Turkey 1990–1995 Case Auto-Summary (cont.)

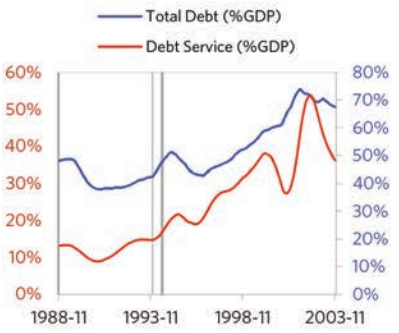
The Reflation Phase

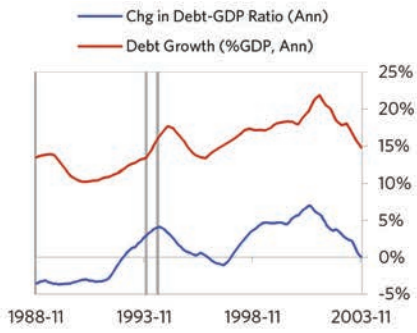
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, after a relatively short "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 5% of GDP), and make the currency more attractive to hold. Turkey was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 classic policy levers. It also benefited from an IMF assistance program. As shown in the attribution chart to the right, debt as a % of GDP fell by 11% (7% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Turkey's now much lower currency (with real FX bottoming at -21% during the beautiful period) set up the country for renewed competitiveness. It took 1.6 years before real GDP reached its prior peak and equity prices in USD terms recovered within 4 years.



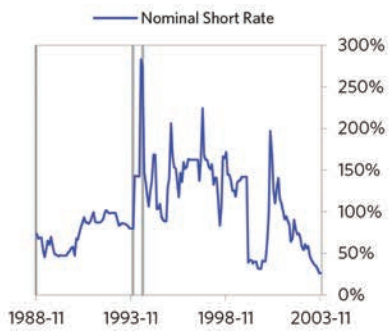
Turkey 1990–1995 Chart Deck Appendix

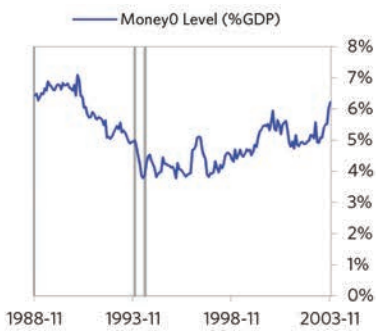
Indebtedness

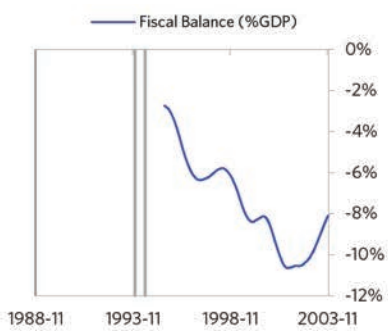




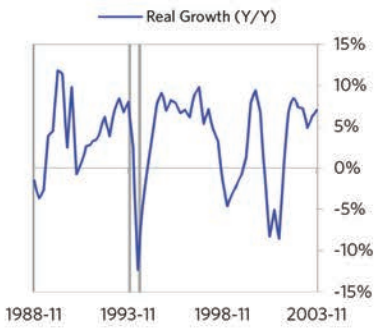
Monetary and Fiscal Policy

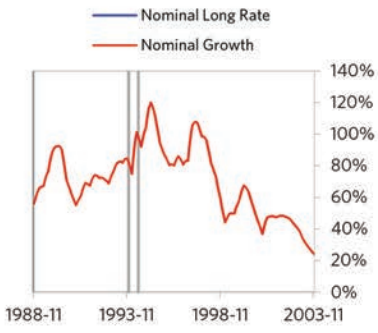






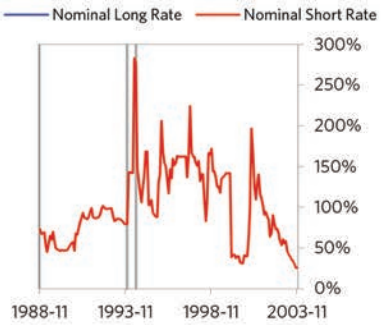
Economic Conditions

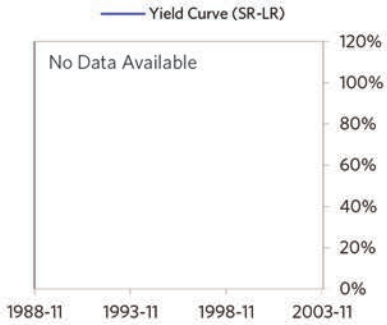


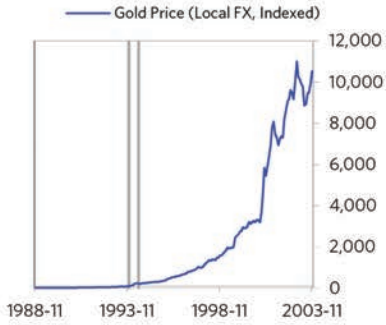


Turkey 1990–1995 Chart Deck Appendix (cont.)

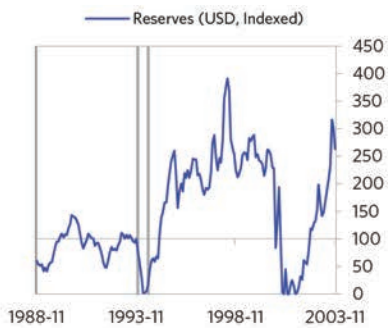
Markets

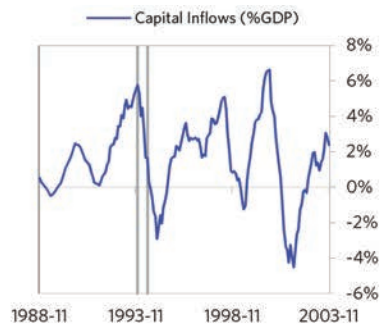


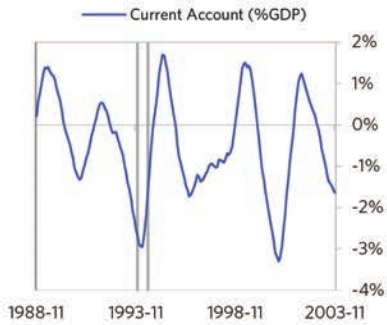


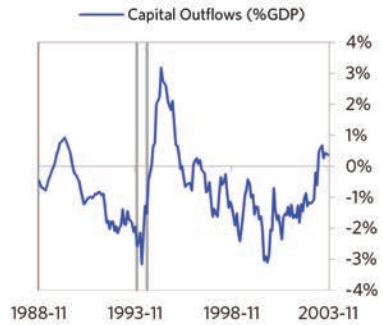


External Position









Mexico 1991–2005 Case Auto-Summary

As shown in the charts to the right, Mexico experienced a classic inflationary deleveraging cycle between 1991 and 2005.

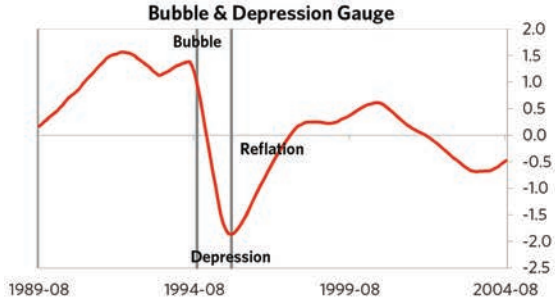
The Bubble Phase

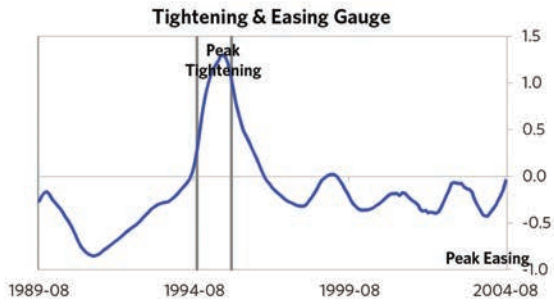
Between 1991 and 1994, Mexico experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong equity returns, and strong growth. Debts rose by 10% of GDP during the bubble to a pre-crisis peak of 85% of GDP. In this case, a high share of the debt was in foreign currencies (25% of GDP)—leaving Mexico with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 8% of GDP, which helped to finance a current account deficit of 7% of GDP. Aided by that rising debt and capital, growth was strong (at 4%), while levels of economic activity were high (the GDP gap peaked at 3%). Furthermore, strong asset returns (equities averaged 25% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Mexico's dependence on foreign financing created an unsustainable situation.

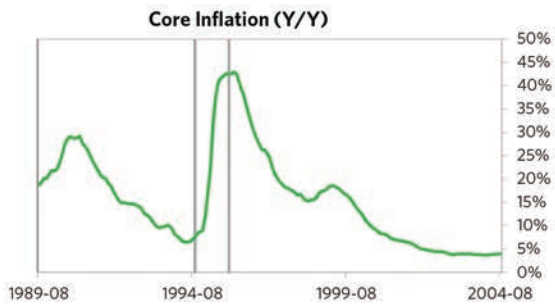
The Depression Phase

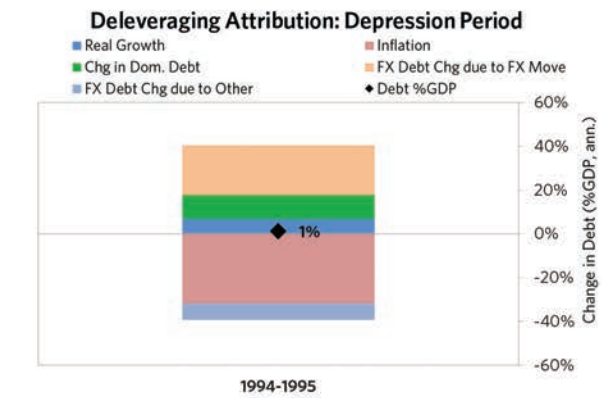
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1994 to 1995. High debt levels left Mexico vulnerable to a shock—which came in the form of an outbreak of political violence. Mexico suffered from self-reinforcing declines in GDP (falling by 10%), and in stock prices (falling by 66%). Unemployment rates increased by 3%, while currency weakness contributed to high and rising inflation, peaking at 43% during the depression phase, which is normal compared to other similar cases. That makes sense given that Mexico had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Mexico's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 100%), though by the end policy makers had abandoned their currency defense and the currency had fallen by 37%. As shown in the attribution chart to the right, even though Mexico needed a deleveraging, its debt as a % GDP was roughly flat through this period.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







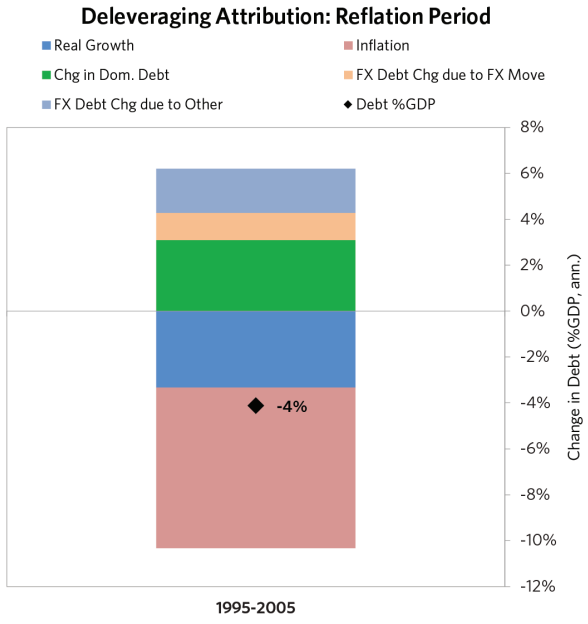


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Mexico 1991–2005 Case Auto-Summary (cont.)

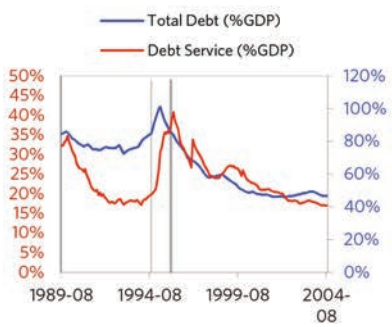
The Reflation Phase

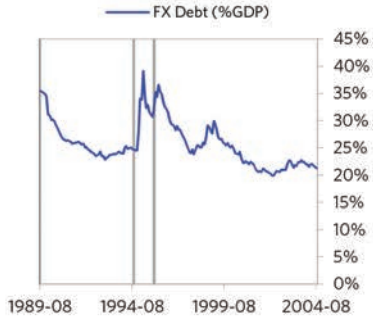
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a relatively short "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 7% of GDP), and make the currency more attractive to hold. Mexico was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 41% (4% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Mexico's now much lower currency (with real FX bottoming at -26% during the beautiful period) set up the country for renewed competitiveness. It took 2 years before real GDP reached its prior peak and equity prices in USD terms recovered within 10 years.

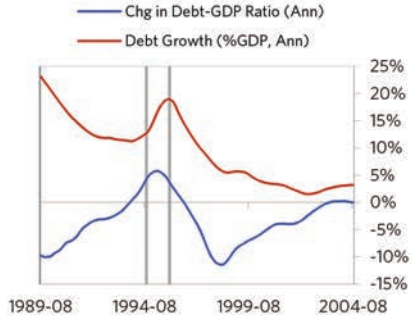


Mexico 1991–2005 Chart Deck Appendix

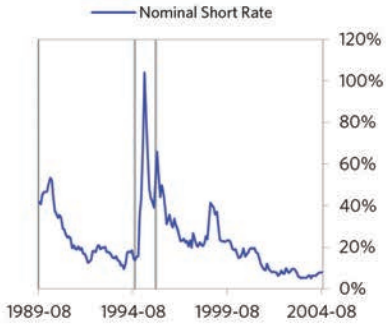
Indebtedness

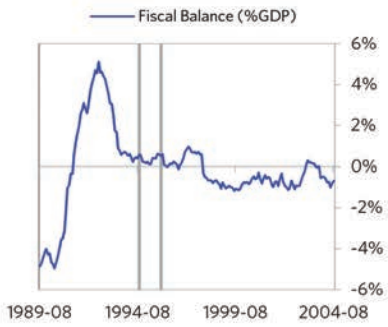




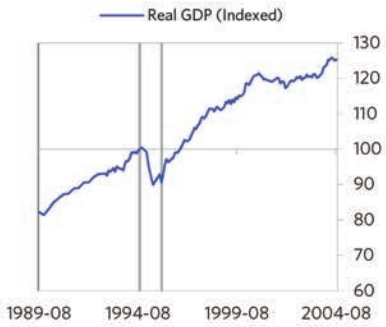


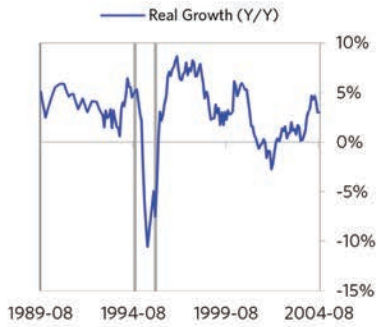
Monetary and Fiscal Policy

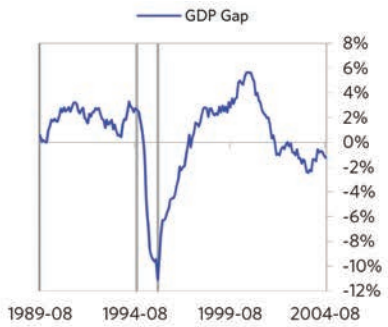


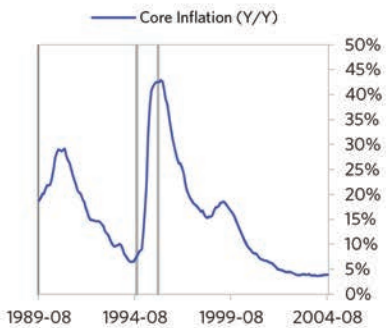


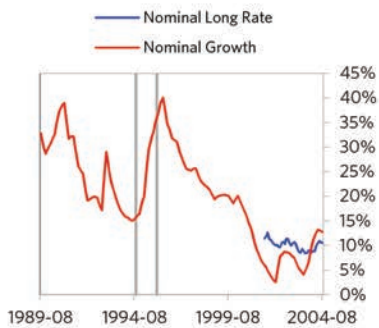
Economic Conditions

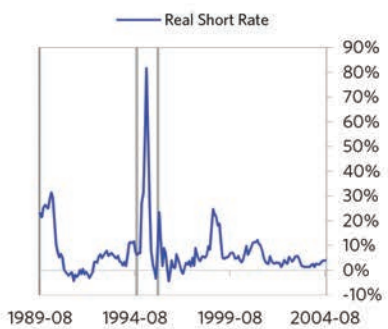






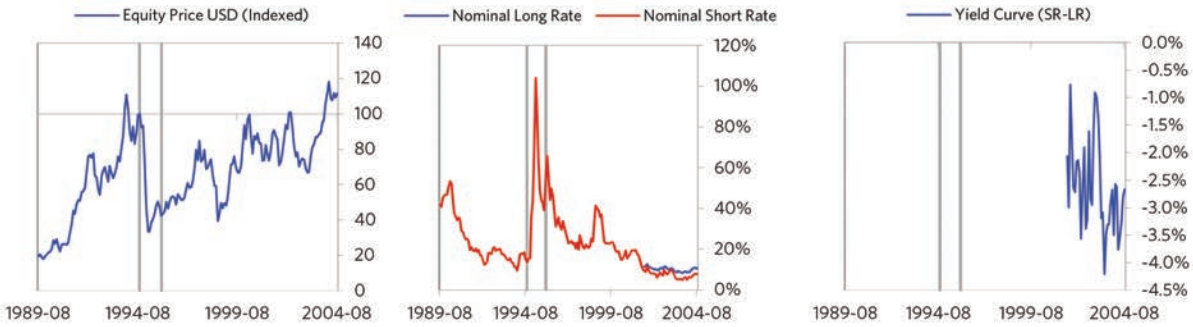


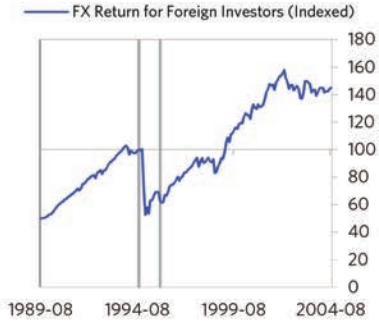


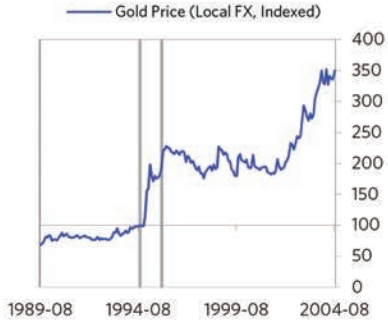


Mexico 1991–2005 Chart Deck Appendix (cont.)

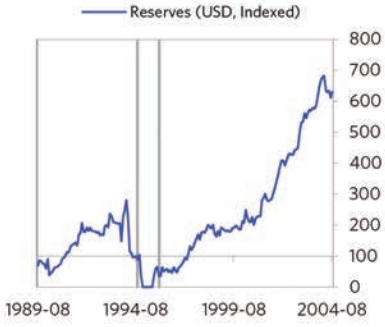
Markets

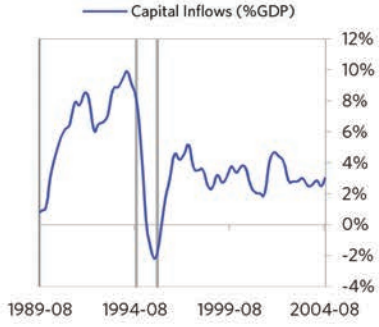


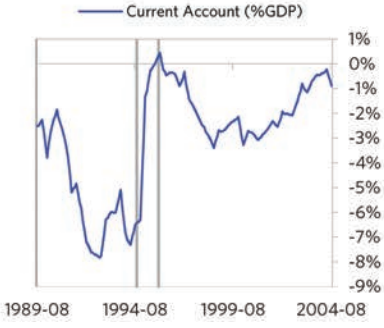


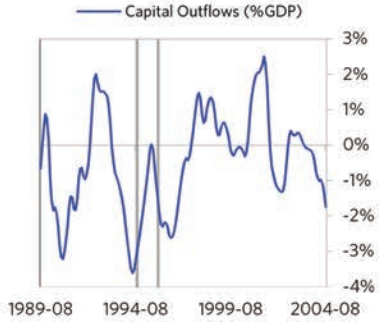


External Position









Bulgaria 1995–2003 Case Auto-Summary

As shown in the charts to the right, Bulgaria experienced a classic hyperinflationary deleveraging cycle between 1995 and 2003.

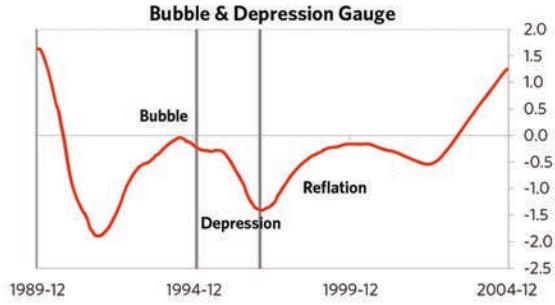
The Bubble Phase

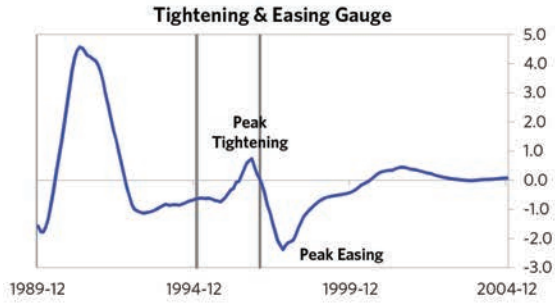
Unlike many other cases, Bulgaria didn't experience a broad-based bubble in the years before the crisis, but it did build up a substantial debt stock. In this case, a high share of the debt was in foreign currencies (82% of GDP)—leaving Bulgaria with a large exposure to a pullback in foreign capital. Bulgaria also became somewhat dependent on continuous foreign financing, running a current account deficit of 4%. Ultimately, these high debts and Bulgaria's dependence on foreign financing created an unsustainable situation.

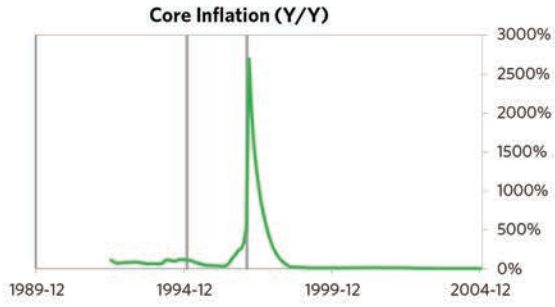
The Depression Phase

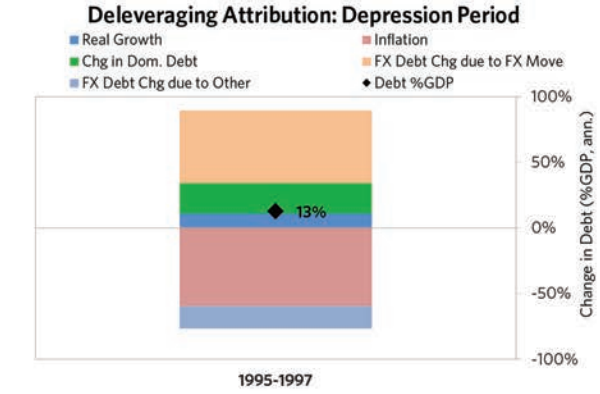
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1995 to 1997. High debt levels left Bulgaria vulnerable to a shock—which came in the form of a wave of losses from over-indebted companies/banks. Bulgaria suffered a fall in foreign funding (with capital inflows falling by 6% of GDP), leading to a tightening (policy makers hiked short rates by 228%) and a meaningful decline in the currency (real FX fell by 96%)—which coincided with self-reinforcing declines in GDP (falling by 13%). In addition, currency weakness contributed to very high and rising inflation. Bulgaria's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 75%), though it eventually abandoned its currency defense.

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







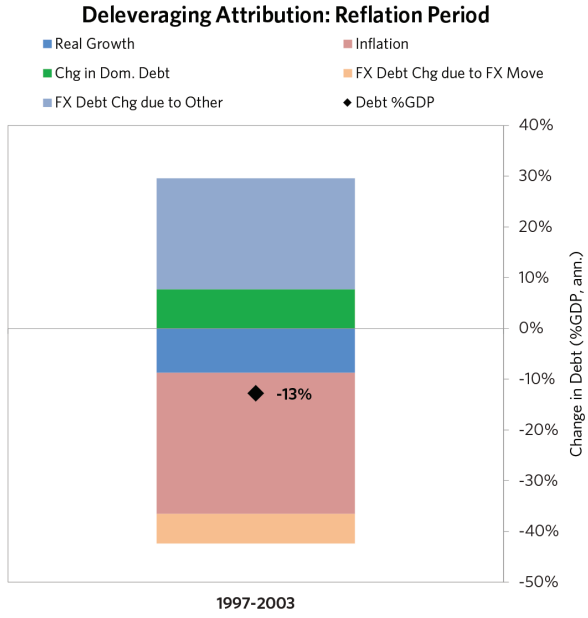


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Bulgaria 1995–2003 Case Auto-Summary (cont.)

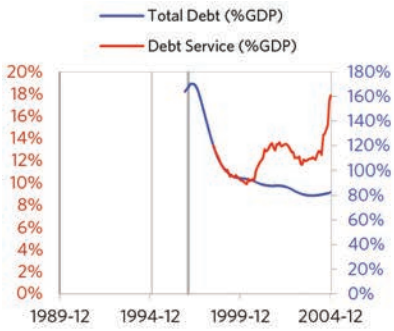
The Reflation Phase

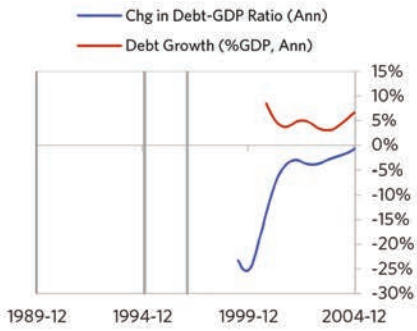
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, the tightening wasn't enough to produce the needed adjustments before the country fell into a spiral of declining exchange rates and hyperinflation. Real FX bottomed at -63% and inflation peaked at over 500%. That makes sense given that Bulgaria had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Bulgaria was aggressive in managing its financial institutions and bad debts, pulling 5 out of 9 typical policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program. But, as is classic, stopping the inflationary spiral ultimately required Bulgaria to make more significant structural changes, including redenominating the lev, pegging it to the Deutsche Mark and backing it by foreign exchange reserves. It took 8 years before real GDP reached its prior peak.



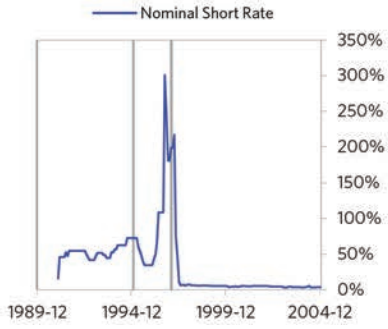
Bulgaria 1995–2003 Chart Deck Appendix

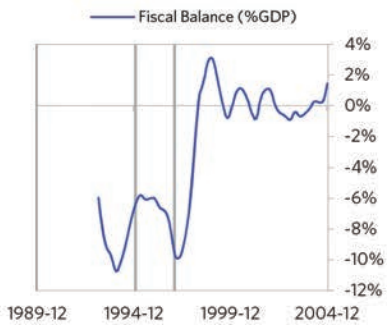
Indebtedness



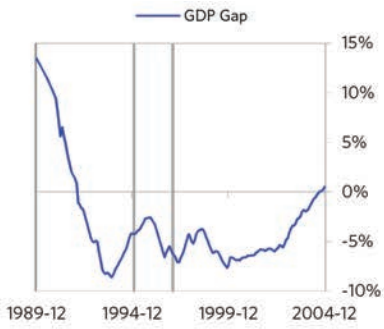


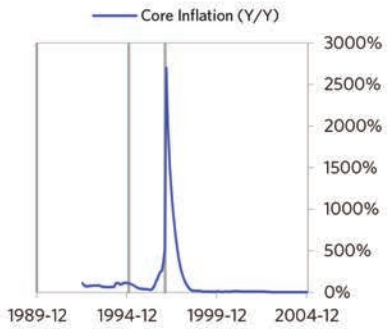
Monetary and Fiscal Policy

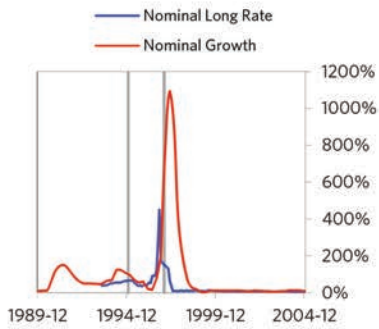




Economic Conditions

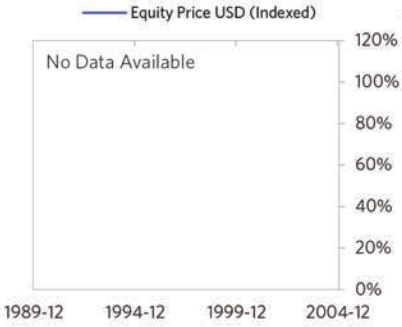


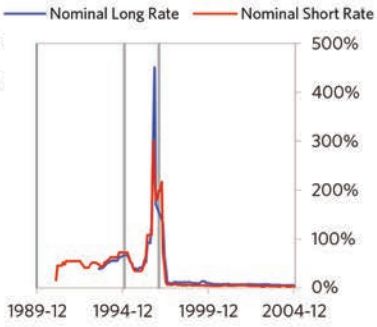


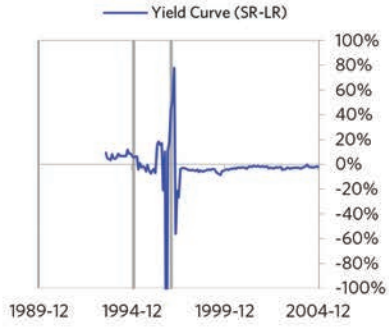


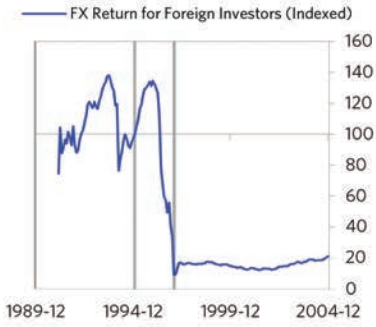
Bulgaria 1995–2003 Chart Deck Appendix (cont.)

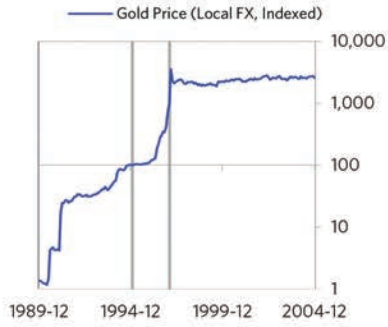
Markets



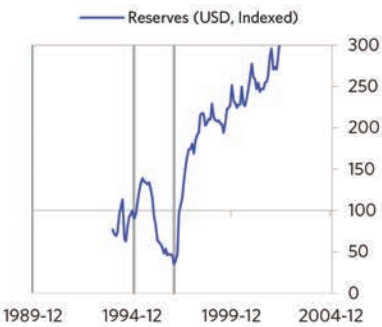


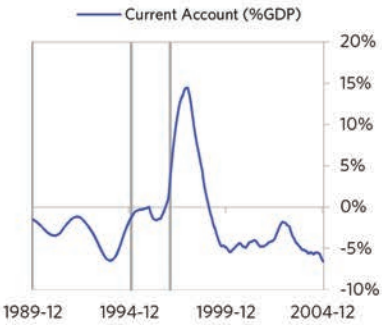


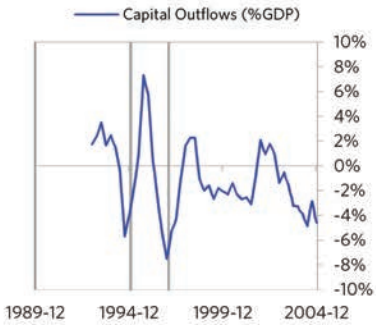




External Position







Thailand 1993–2004 Case Auto-Summary

As shown in the charts to the right, Thailand experienced a transitory inflationary deleveraging cycle between 1993 and 2004. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

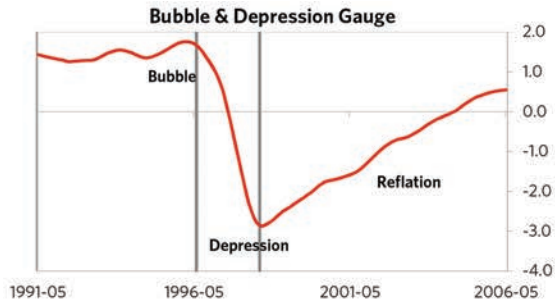
The Bubble Phase

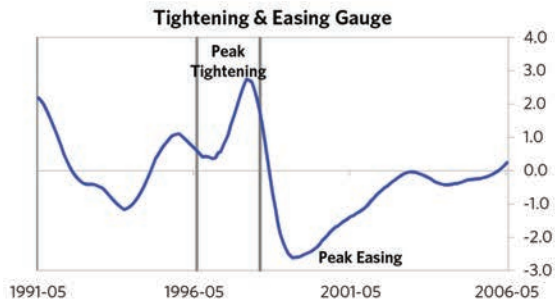
Between 1993 and 1996, Thailand experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong equity returns, and strong growth. Debts rose by 44% of GDP during the bubble to a pre-crisis peak of 183% of GDP. In this case, a high share of the debt was in foreign currencies (51% of GDP)—leaving Thailand with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 15% of GDP, which helped to finance a current account deficit of 9% of GDP. Aided by that rising debt and capital, growth was strong (at 8%), while levels of economic activity were high (the GDP gap peaked at 8%). Furthermore, strong asset returns (equities averaged 12% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Thailand's dependence on foreign financing created an unsustainable situation.

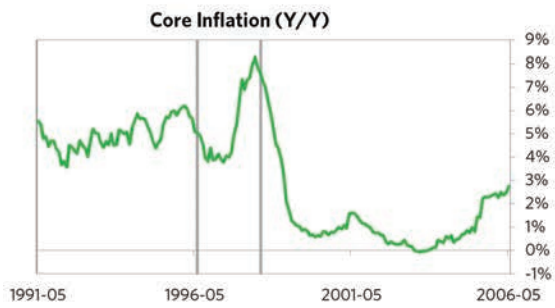
The Depression Phase

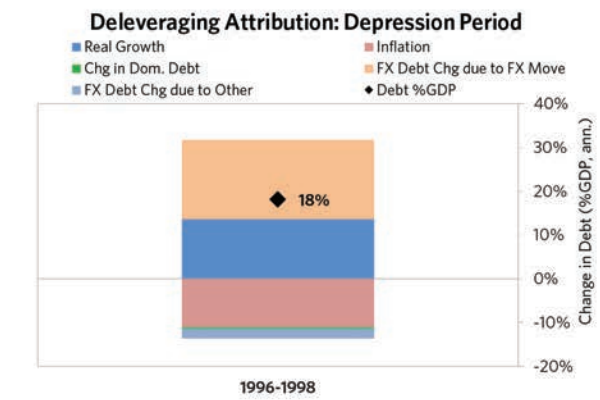
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1996 to 1998. At its pre-crisis peak, debt service reached 49% of GDP, making Thailand vulnerable to a shock—which came in the form of a wave of losses from over-indebted companies/banks. Thailand suffered a fall in foreign funding (with capital inflows falling by 34% of GDP), leading to a tightening (policy makers hiked short rates by 11%) and a meaningful decline in the currency (real FX fell by 19%)—which coincided with self-reinforcing declines in GDP (falling by 14%), and in stock prices (falling by 87%). In addition, currency weakness contributed to moderate and rising inflation, peaking at 8% during the depression phase, which is low compared to other similar cases. That makes sense given that Thailand had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being their current account deficit). Thailand's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 100%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Thailand needed a deleveraging, its debt as a % GDP went up by 36% (18% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









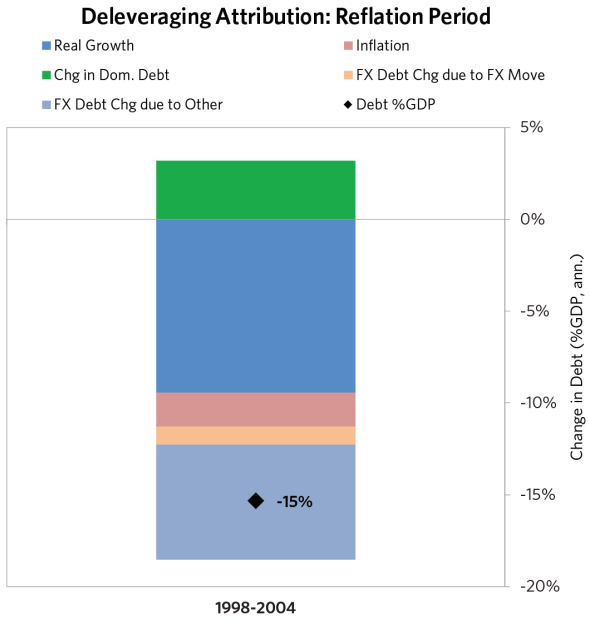
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Thailand 1993–2004 Case Auto-Summary (cont.)

The Reflation Phase

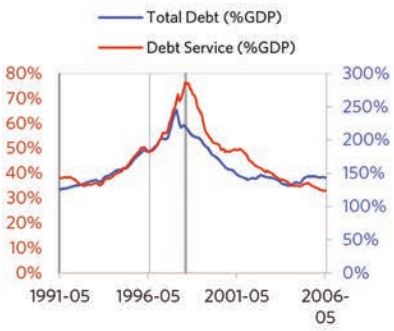
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 21% of GDP), and make the currency more attractive to hold. Thailand was very aggressive in managing its financial institutions and bad debts, pulling 8 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program. As shown in the attribution chart to the right, debt as a % of GDP fell by 88% (15% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising, driven primarily by higher real growth. Meanwhile, Thailand's now lower currency (with real FX bottoming at -16% during the beautiful period) set up the country for renewed competitiveness. It took 5 years before real GDP reached its prior peak and equity prices in USD terms recovered within 23 years.

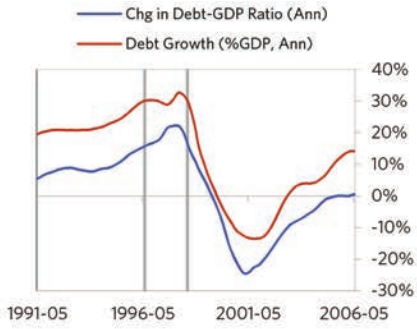
The crisis had a notable impact on the politics of Thailand, as it helped set the stage for Thaksin Shinawatra, whom many people consider a populist leader, to take power in 2001.



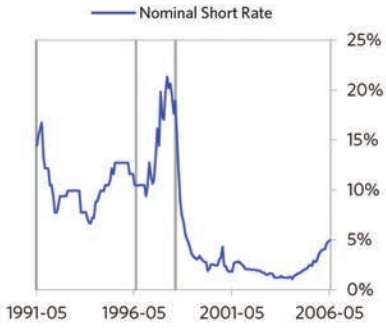
Thailand 1993–2004 Chart Deck Appendix

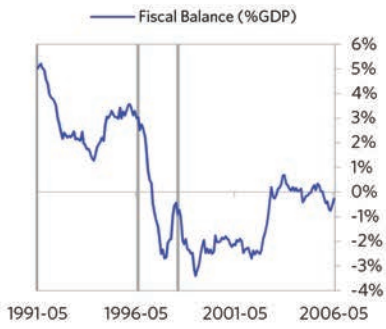
Indebtedness



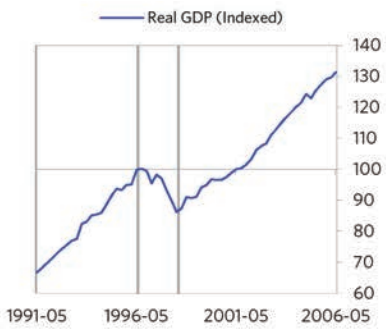


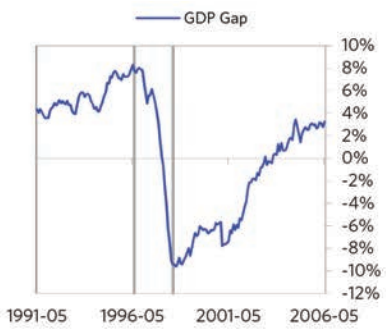
Monetary and Fiscal Policy

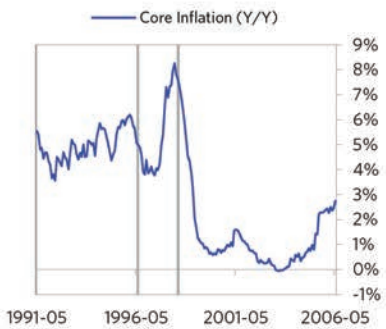


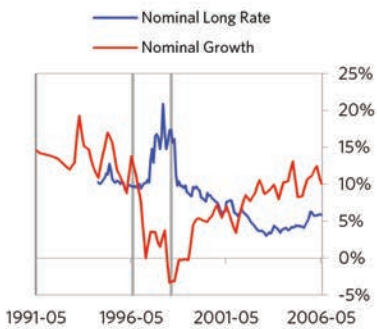


Economic Conditions



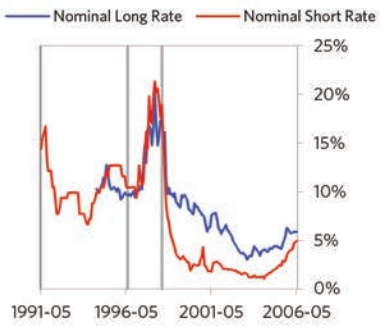


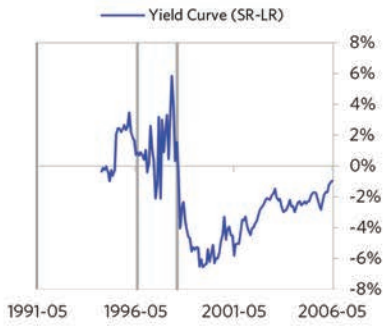


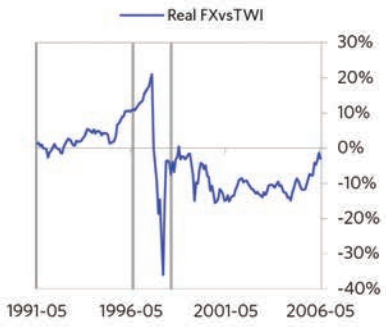


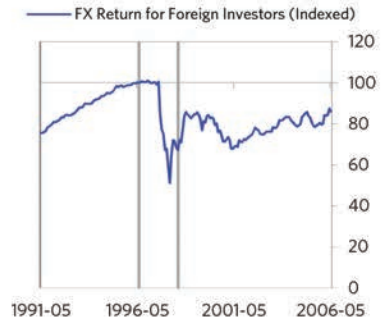
Thailand 1993–2004 Chart Deck Appendix (cont.)

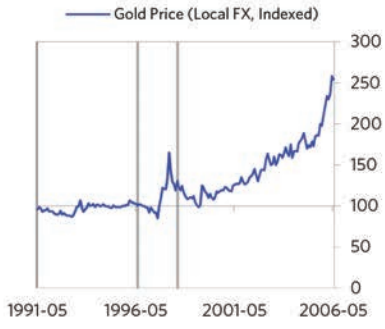
Markets



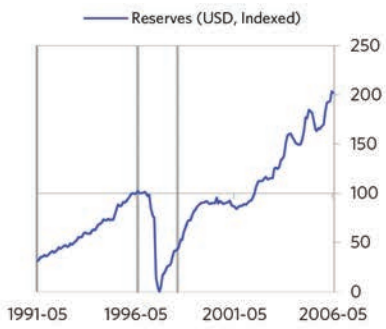


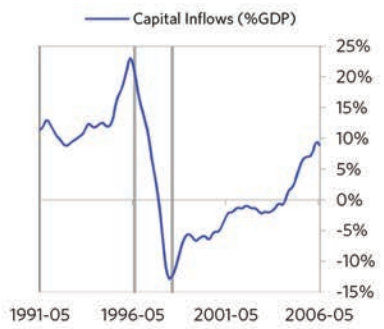


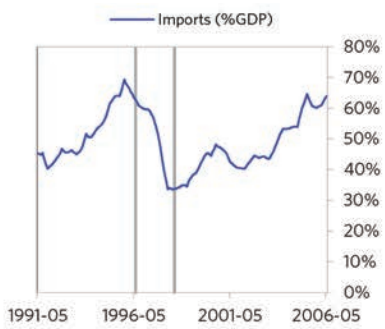


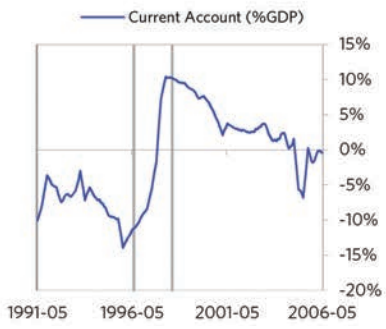


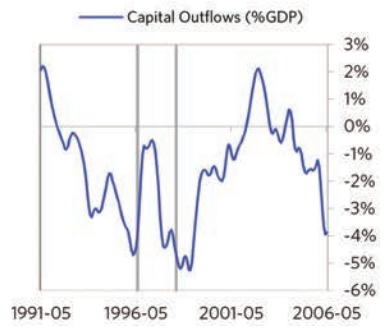
External Position











Indonesia 1994–2012 Case Auto-Summary

As shown in the charts to the right, Indonesia experienced a transitory inflationary deleveraging cycle between 1994 and 2012. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

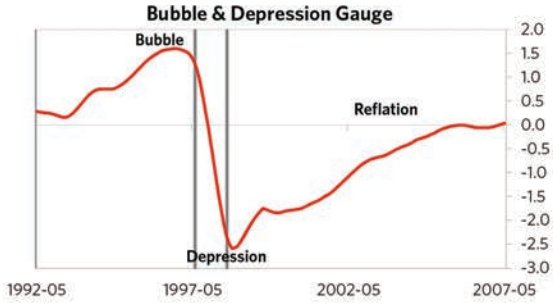
The Bubble Phase

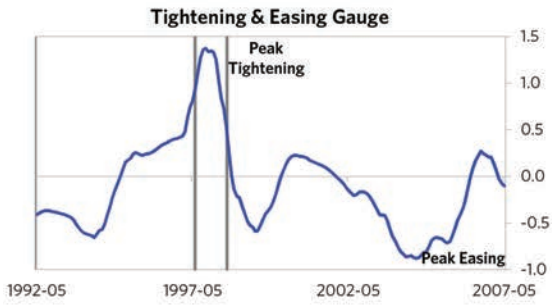
Between 1994 and 1997, Indonesia experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong equity returns, and strong growth. By the bubble's end, debts had reached a pre-crisis peak of 104% of GDP. In this case, a high share of the debt was in foreign currencies (51% of GDP)—leaving Indonesia with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were low but positive, averaging around 5% of GDP, while Indonesia maintained a current account deficit of 3% of GDP. Aided by that rising debt and capital, growth was strong (at 7%), while levels of economic activity were high (the GDP gap peaked at 13%). Furthermore, strong asset returns (equities averaged 12% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Competitiveness became an issue, as Indonesia's real FX peaked at +19%. Taken together, these bubble pressures and Indonesia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

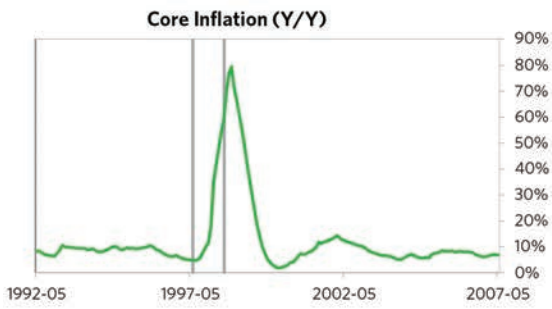
The Depression Phase

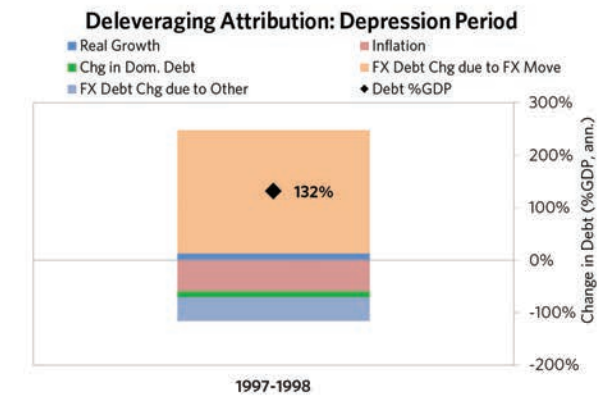
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1997 to 1998. High debt levels left Indonesia vulnerable to a shock—which came in the form of the 1997 Asian financial crisis. Indonesia suffered a fall in foreign funding (with capital inflows falling by 13% of GDP), leading to a tightening (policy makers hiked short rates by 43%) and a meaningful decline in the currency (real FX fell by 110%)—which coincided with self-reinforcing declines in GDP (falling by 14%), and in stock prices (falling by 89%). In addition, currency weakness contributed to high and rising inflation, peaking at 59% during the depression phase, which is normal compared to other similar cases. That's true despite the fact that Indonesia had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being high foreign-denominated debts). Indonesia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 23%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Indonesia needed a deleveraging, its debt as a % GDP went up by 132% (132% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







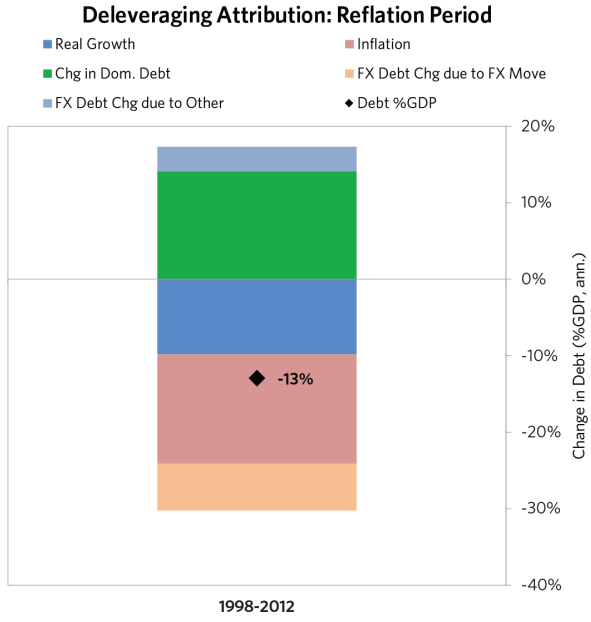


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Indonesia 1994–2012 Case Auto-Summary (cont.)

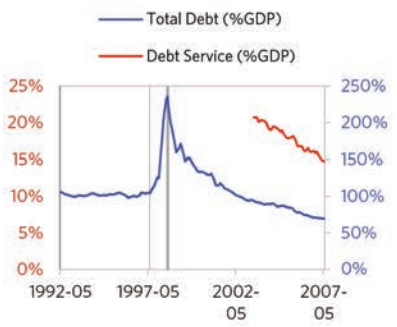
The Reflation Phase

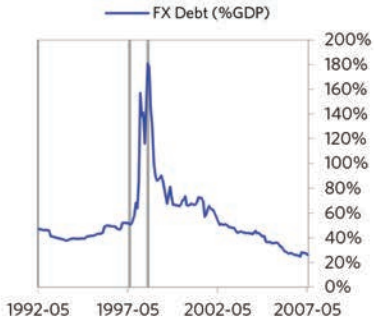
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a relatively short "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 4% of GDP), and make the currency more attractive to hold. Indonesia was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program. As shown in the attribution chart to the right, debt as a % of GDP fell by 178% (13% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Indonesia's now much lower currency (with real FX bottoming at -90% during the beautiful period) set up the country for renewed competitiveness. It took 5 years before real GDP reached its prior peak and equity prices in USD terms recovered within 13 years.

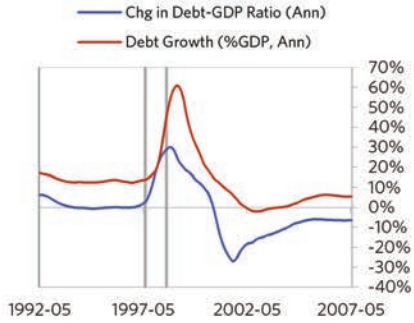


Indonesia 1994–2012 Chart Deck Appendix

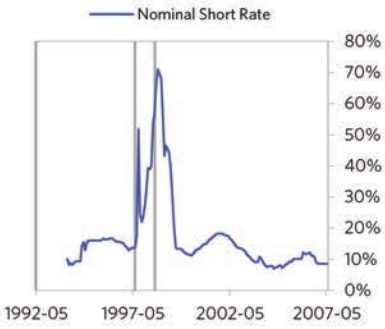
Indebtedness

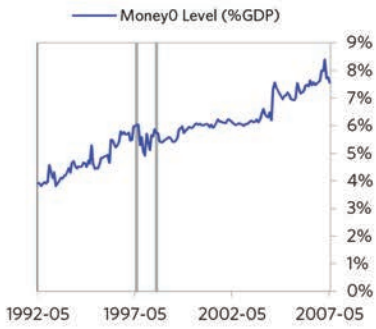


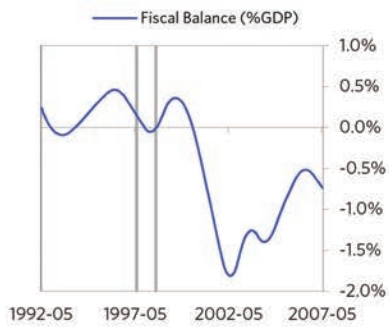




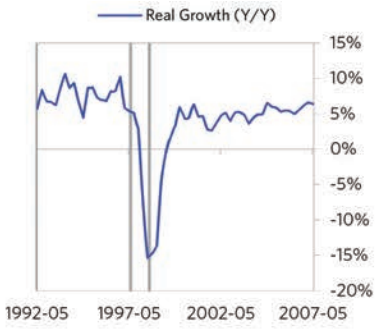
Monetary and Fiscal Policy

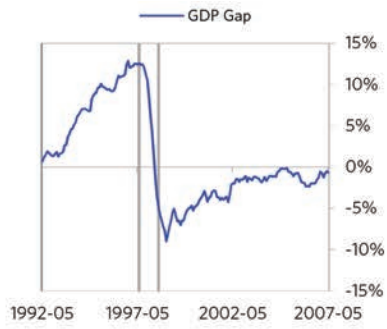


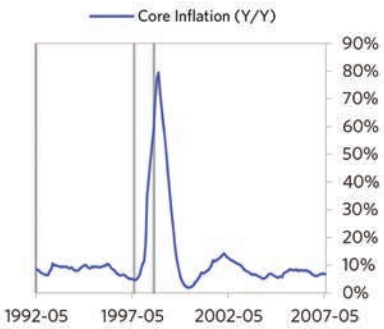


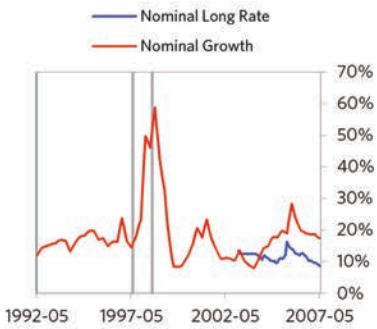


Economic Conditions



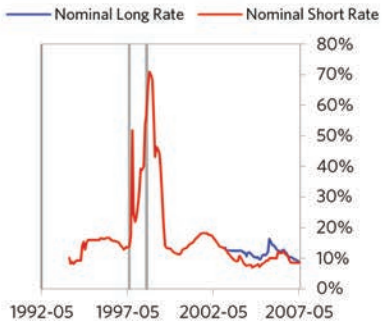


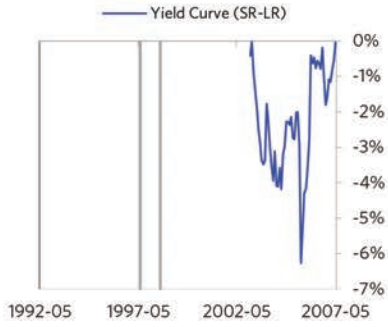


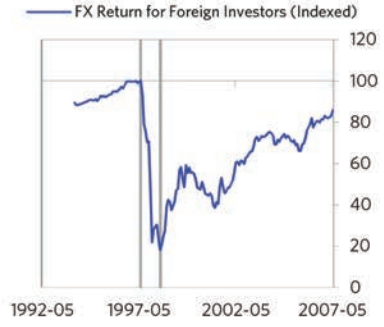


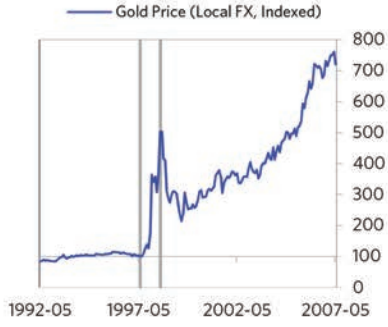
Indonesia 1994–2012 Chart Deck Appendix (cont.)

Markets

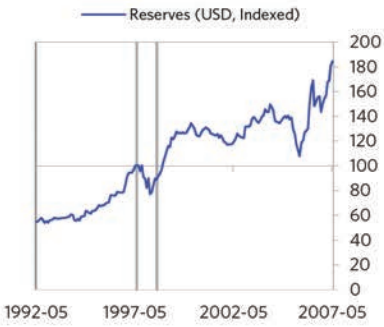


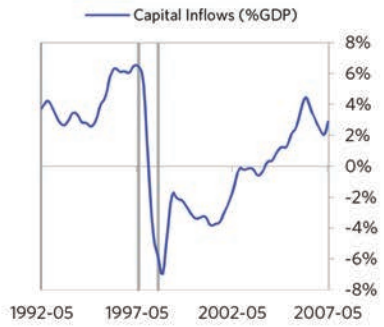


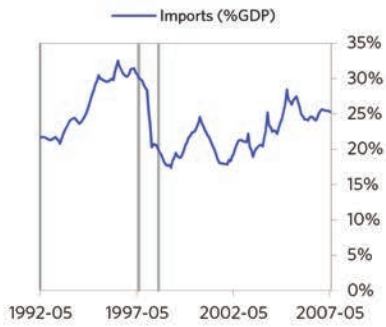


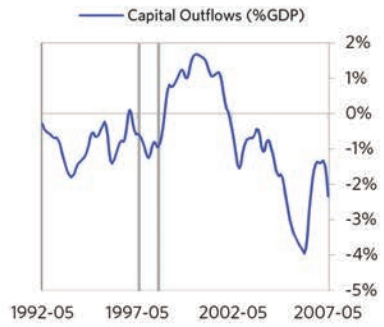


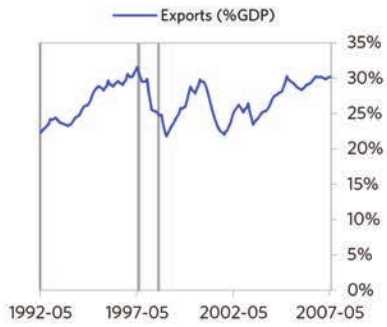
External Position











Korea 1994–2001 Case Auto-Summary

As shown in the charts to the right, Korea experienced a transitory inflationary deleveraging cycle between 1994 and 2001. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

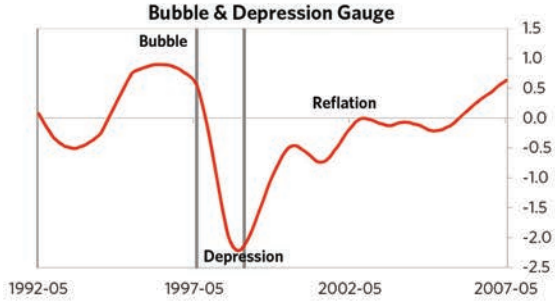
The Bubble Phase

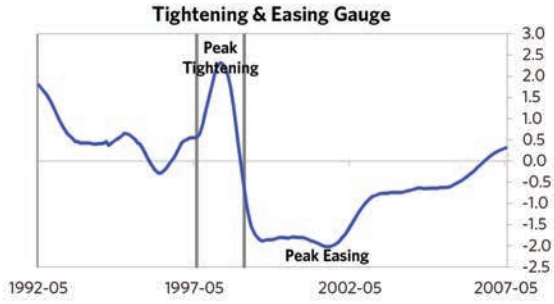
Between 1994 and 1997, Korea experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt and strong growth. Debts rose by 23% of GDP during the bubble to a pre-crisis peak of 163% of GDP. In this case, a high share of the debt was in foreign currencies (27% of GDP)—leaving Korea with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were moderately strong, averaging around 8% of GDP, which helped to finance a current account deficit of 3% of GDP. Aided by that rising debt and capital, growth was strong (at 8%), while levels of economic activity were high (the GDP gap peaked at 5%). Taken together, these bubble pressures and Korea's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

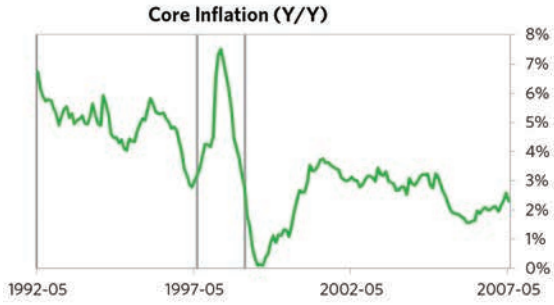
The Depression Phase

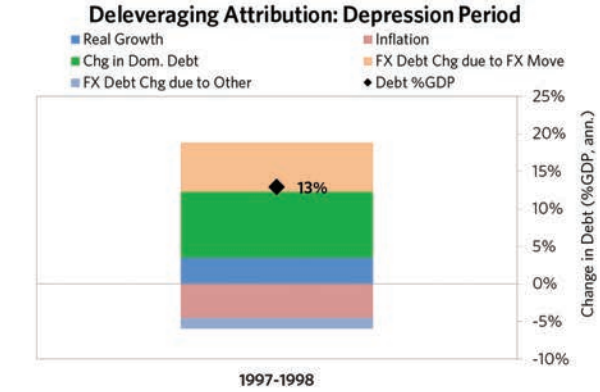
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1997 to 1998. At its pre-crisis peak, debt service reached 42% of GDP, making Korea vulnerable to a shock—which came in the form of the 1997 Asian financial crisis. Korea suffered a fall in foreign funding (with capital inflows falling by 9% of GDP), leading to a tightening (policy makers hiked short rates by 14%) and a meaningful decline in the currency (real FX fell to -50%)—which coincided with self-reinforcing declines in GDP (falling by 8%), in stock prices (falling by 75%) and in home prices (falling by 13%). Unemployment rates increased by 6%, while currency weakness contributed to moderate inflation, peaking at 7% during the depression phase, which is low compared to other similar cases. That makes sense given that Korea had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low central bank reserves). Korea's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 24%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Korea needed a deleveraging, its debt as a % GDP went up by 19% (13% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







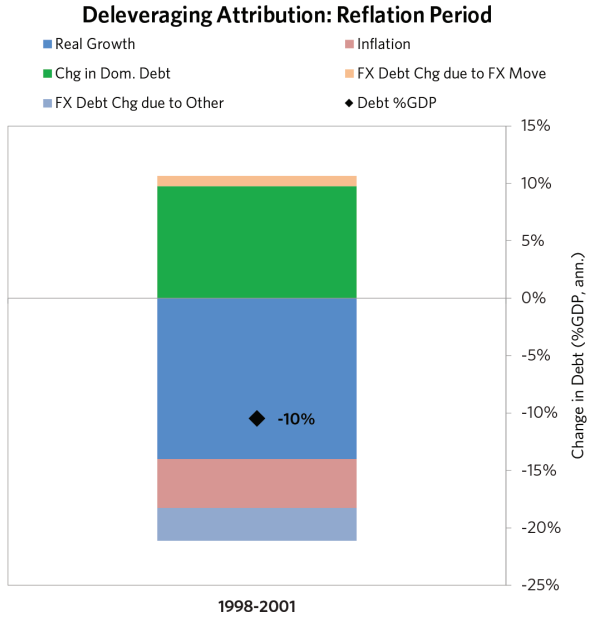


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Korea 1994–2001 Case Auto-Summary (cont.)

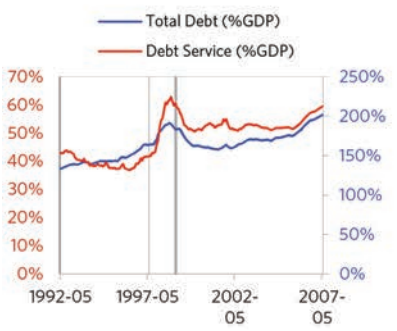
The Reflation Phase

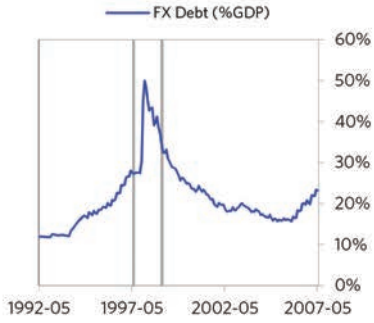
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 7% of GDP), and make the currency more attractive to hold. Korea was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 25% (10% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising, driven primarily by higher real growth. Meanwhile, Korea's now lower currency (with real FX bottoming at -17% during the beautiful period) set up the country for renewed competitiveness. It took 1.7 years before real GDP reached its prior peak and equity prices in USD terms recovered within 9 years.

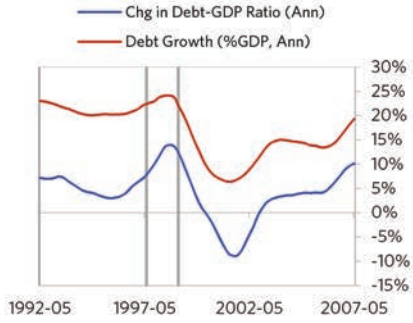


Korea 1994–2001 Chart Deck Appendix

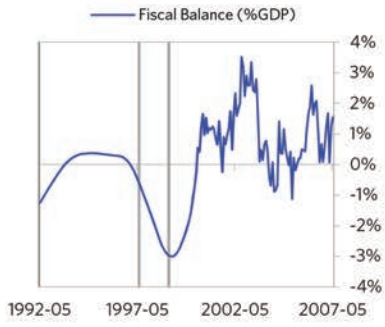
Indebtedness



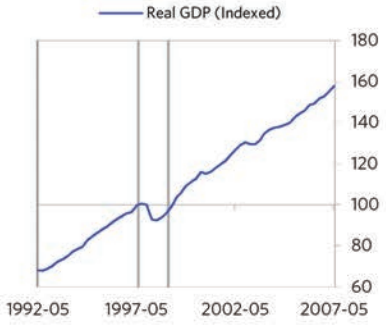


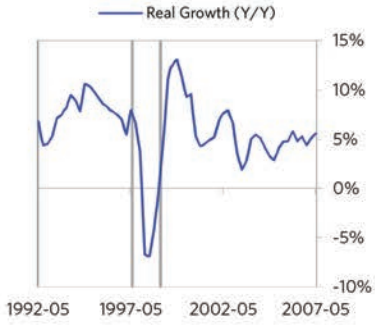


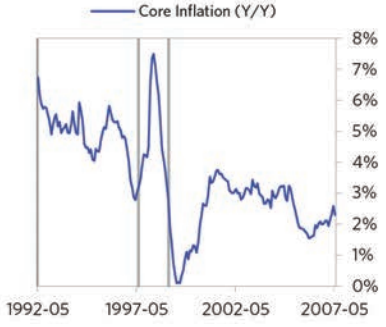
Monetary and Fiscal Policy

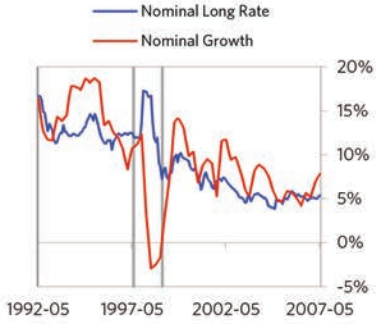


Economic Conditions



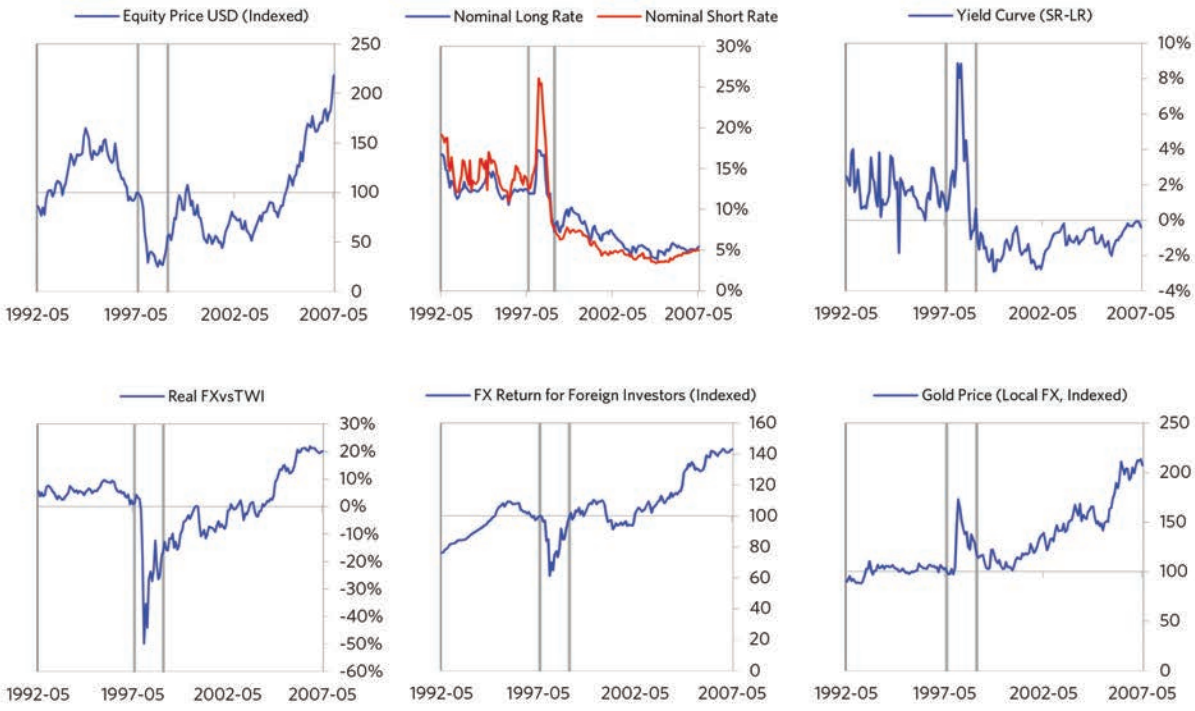




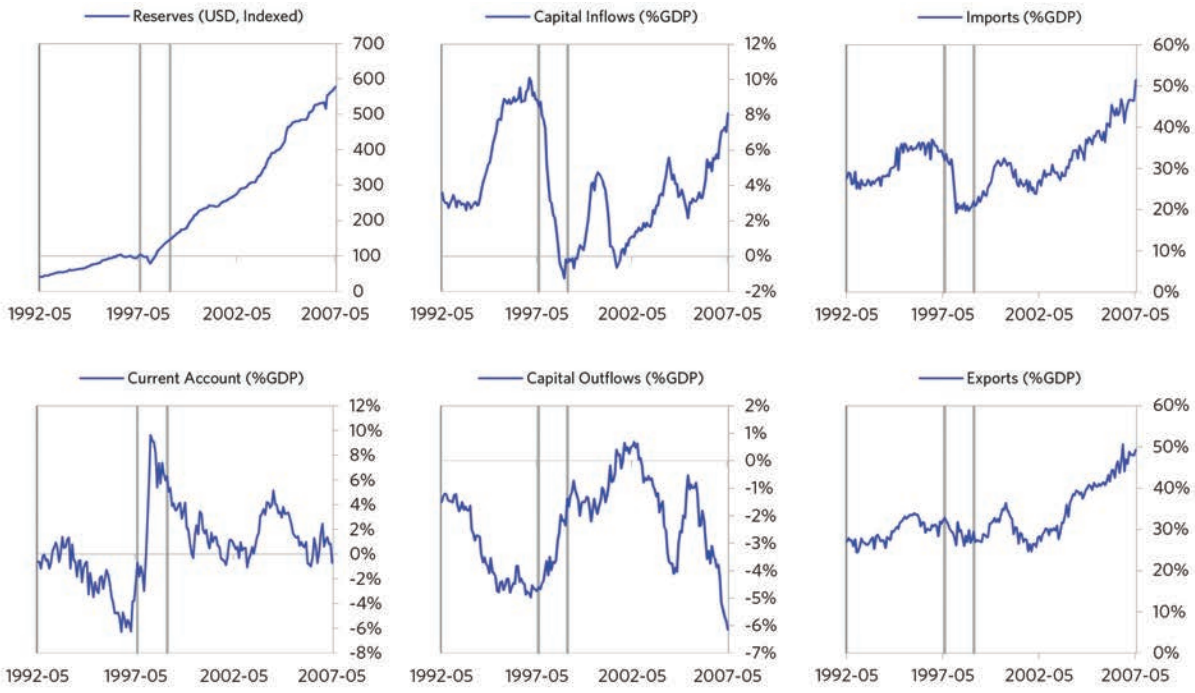


Korea 1994–2001 Chart Deck Appendix (cont.)

Markets



External Position



Malaysia 1994–2001 Case Auto-Summary

As shown in the charts to the right, Malaysia experienced a transitory inflationary deleveraging cycle between 1994 and 2001. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

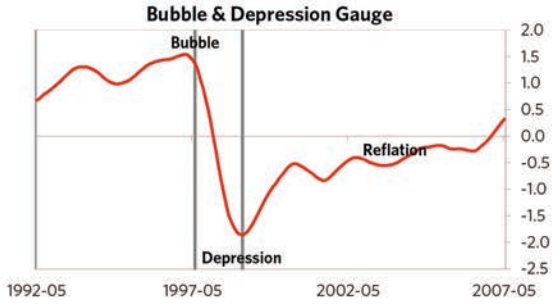
The Bubble Phase

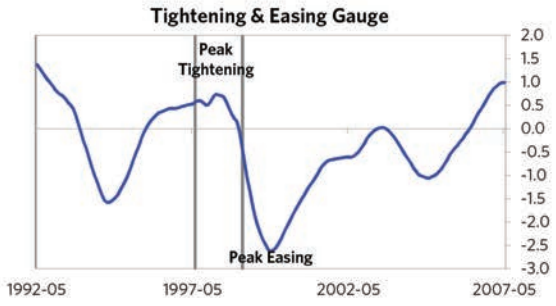
Between 1994 and 1997, Malaysia experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt and strong growth. Debts rose by 53% of GDP during the bubble to a pre-crisis peak of 212% of GDP. In this case, a high share of the debt was in foreign currencies (39% of GDP)—leaving Malaysia with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were moderately strong, averaging around 6% of GDP, which helped to finance a current account deficit of 8% of GDP. Aided by that rising debt and capital, growth was strong (at 10%), while levels of economic activity were high (the GDP gap peaked at 9%). Taken together, these bubble pressures and Malaysia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

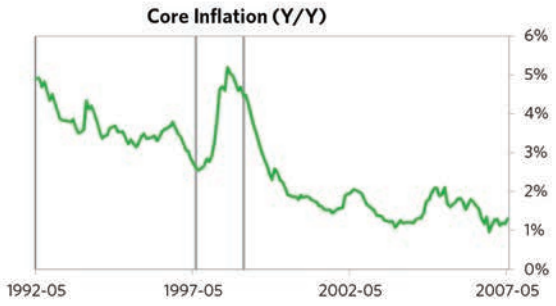
The Depression Phase

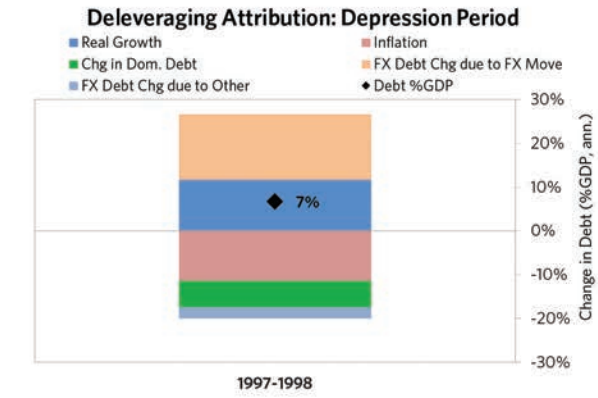
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1997 to 1998. At its pre-crisis peak, debt service reached 45% of GDP, making Malaysia vulnerable to a shock—which came in the form of the 1997 Asian financial crisis. Malaysia suffered a fall in foreign funding (with capital inflows falling by 5% of GDP), leading to a tightening (policy makers hiked short rates by 4%) and a meaningful decline in the currency (real FX fell by 24%)—which coincided with self-reinforcing declines in GDP (falling by 9%), and in stock prices (falling by 83%). In addition, currency weakness contributed to rising inflation, peaking at 5% during the depression phase, which is low compared to other similar cases. That makes sense given that Malaysia had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being their current account deficit). Malaysia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 27%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Malaysia needed a deleveraging, its debt as a % GDP went up by 10% (7% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







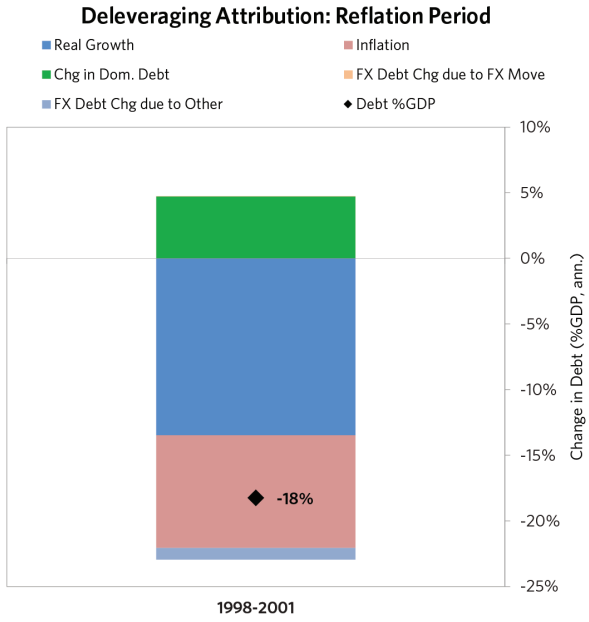


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Malaysia 1994–2001 Case Auto-Summary (cont.)

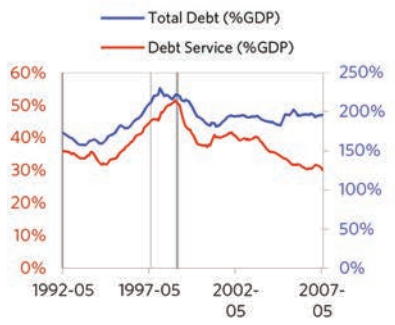
The Reflation Phase

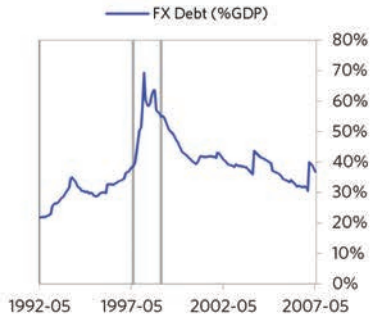
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 19% of GDP), and make the currency more attractive to hold. Malaysia was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. As shown in the attribution chart to the right, debt as a % of GDP fell by 41% (18% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising, driven primarily by higher real growth. Meanwhile, Malaysia's now much lower currency (with real FX bottoming at -9% during the beautiful period) set up the country for renewed competitiveness. It took 2 years before real GDP reached its prior peak and equity prices in USD terms recovered within 14 years.

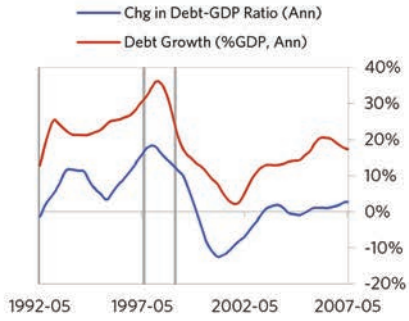


Malaysia 1994–2001 Chart Deck Appendix

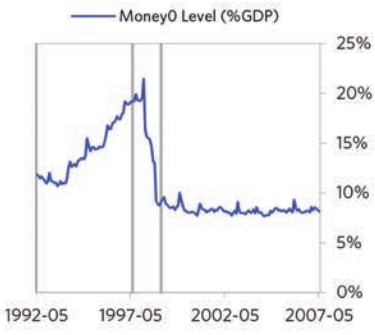
Indebtedness

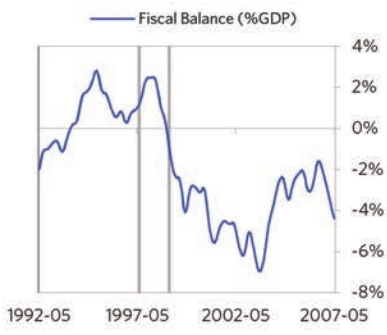




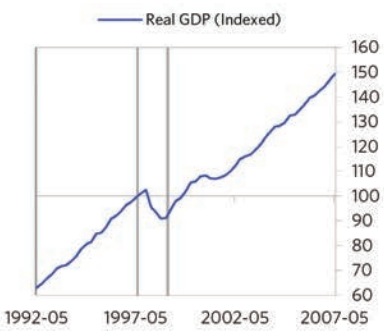


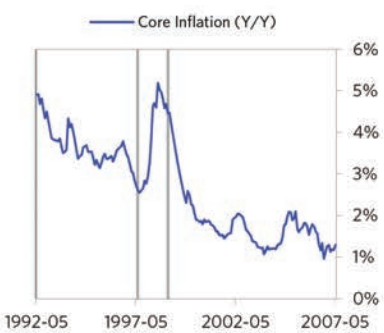
Monetary and Fiscal Policy

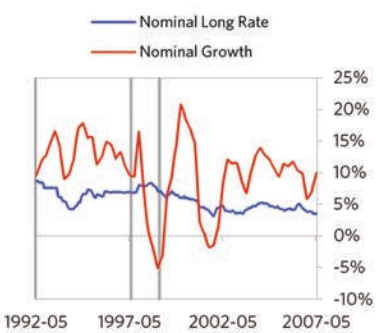




Economic Conditions

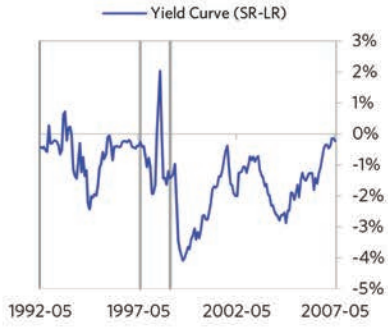


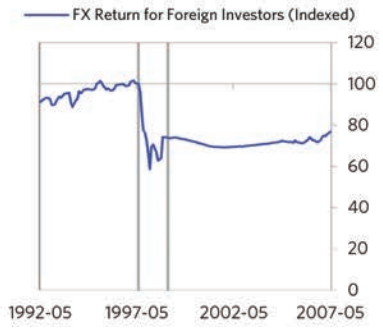




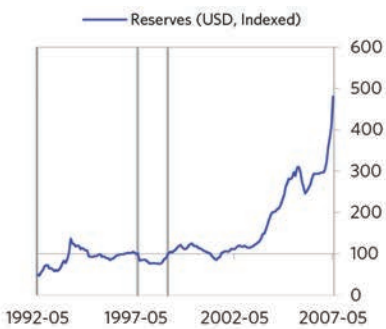
Malaysia 1994–2001 Chart Deck Appendix (cont.)

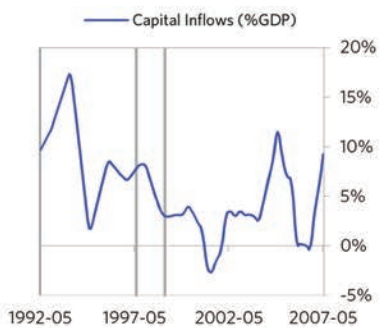
Markets

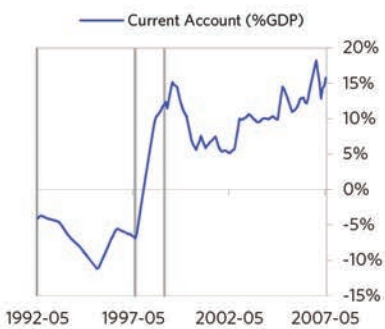


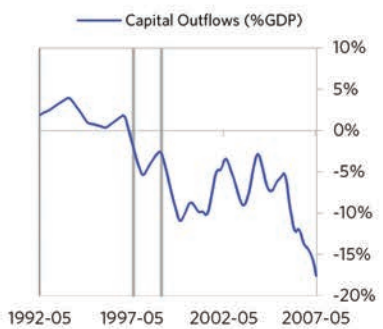


External Position









Philippines 1994–2008 Case Auto-Summary

As shown in the charts to the right, the Philippines experienced a transitory inflationary deleveraging cycle between 1994 and 2008. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

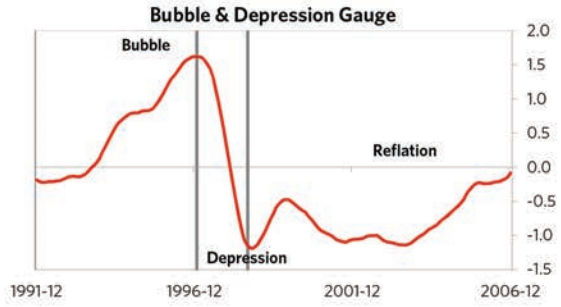
The Bubble Phase

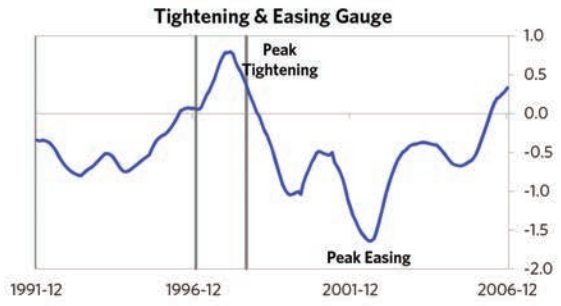
Between 1994 and 1997, the Philippines experienced a bubble that was most characterized by unsustainably strong capital inflows and strong currency returns. Debts rose by 12% of GDP during the bubble to a pre-crisis peak of 95% of GDP. In this case, a high share of the debt was in foreign currencies (51% of GDP)—leaving the Philippines with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 12% of GDP, which helped to finance a current account deficit of 5% of GDP. Aided by that rising debt and capital, growth was strong (at 5%), while levels of economic activity were moderate (the GDP gap peaked at 2%). Furthermore, strong asset returns (equities averaged 8% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Competitiveness became an issue, as the Philippines's real FX peaked at +23%. Taken together, these bubble pressures and the Philippines's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

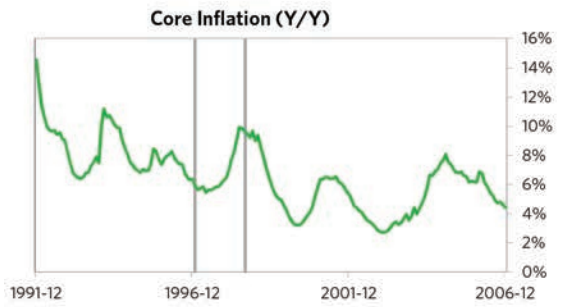
The Depression Phase

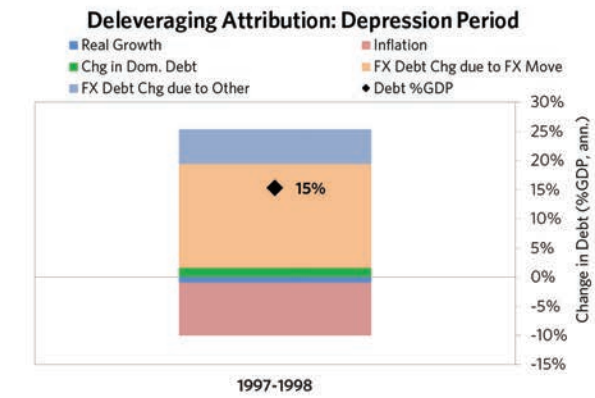
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1997 to 1998. At its pre-crisis peak, debt service reached 25% of GDP, making the Philippines vulnerable to a shock—which came in the form of the 1997 Asian financial crisis. The Philippines suffered a fall in foreign funding (with capital inflows falling by 19% of GDP), leading to a tightening (policy makers hiked short rates by 9%) and a meaningful decline in the currency (real FX fell by 29%)—which coincided with self-reinforcing declines in GDP (falling by 3%), and in stock prices (falling by 79%). In addition, currency weakness contributed to moderate and rising inflation, peaking at 10% during the depression phase, which is low compared to other similar cases. That makes sense given that the Philippines had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low central bank reserves). The Philippines's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 60%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though the Philippines needed a deleveraging, its debt as a % GDP went up by 24% (15% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







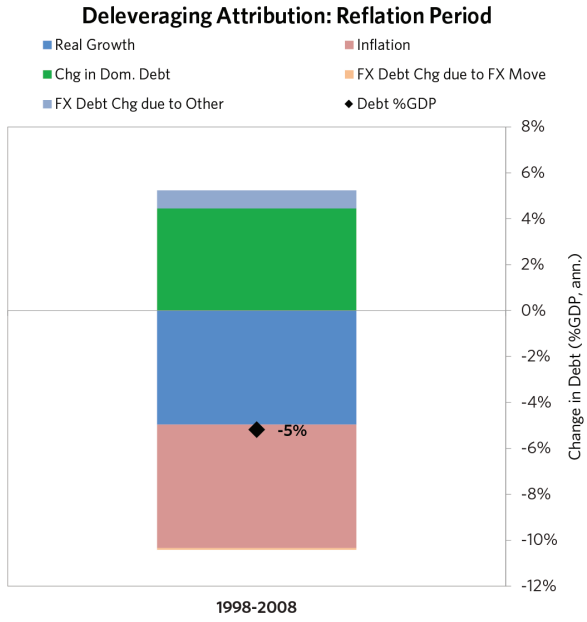


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Philippines 1994–2008 Case Auto-Summary (cont.)

The Reflation Phase

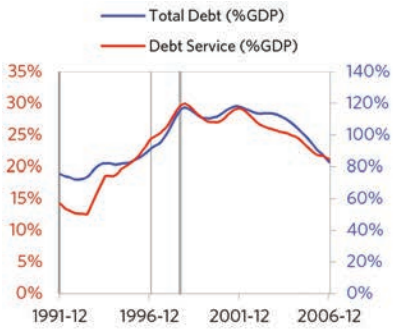
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 11% of GDP), and make the currency more attractive to hold. The Philippines was somewhat aggressive in managing its financial institutions and bad debts, pulling 3 out of 9 classic policy levers. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 51% (5% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, the Philippines's now much lower currency (with real FX bottoming at -24% during the beautiful period) set up the country for renewed competitiveness. In the end, the GDP contraction was brief, while equity prices in USD terms recovered within 16 years.

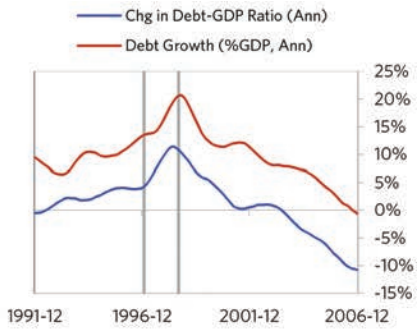


The crisis had a notable impact on the politics of the Philippines, as it helped set the stage for Joseph Estrada, whom many people consider a populist leader, to take power.

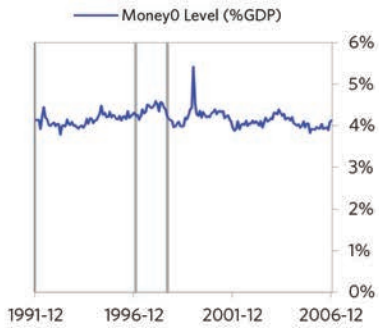
Philippines 1994–2008 Chart Deck Appendix

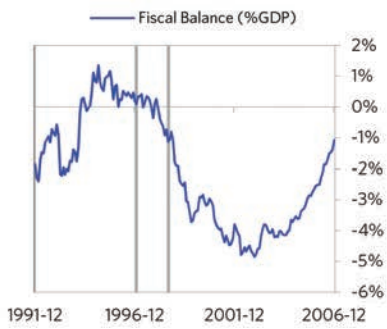
Indebtedness



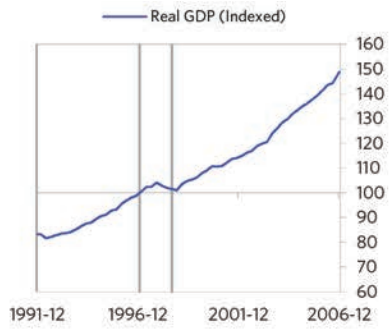


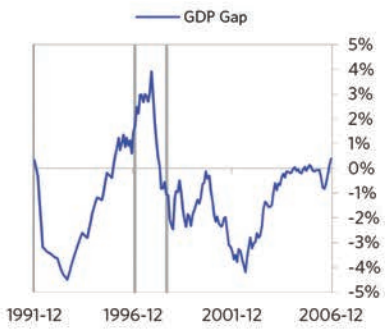
Monetary and Fiscal Policy

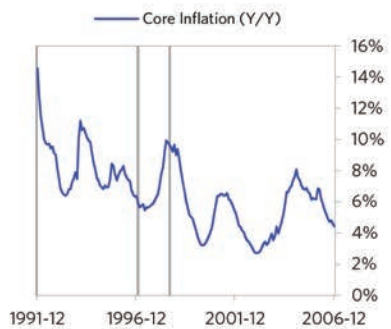


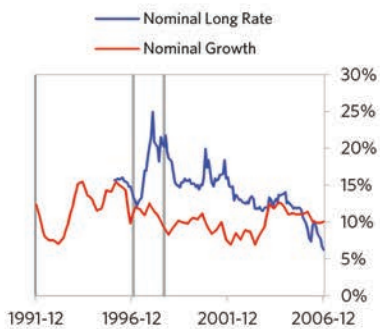


Economic Conditions



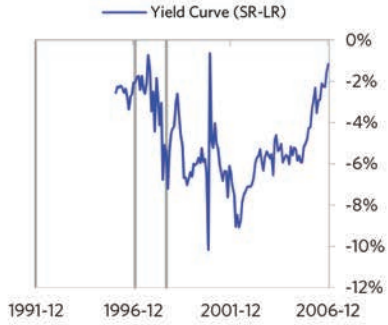




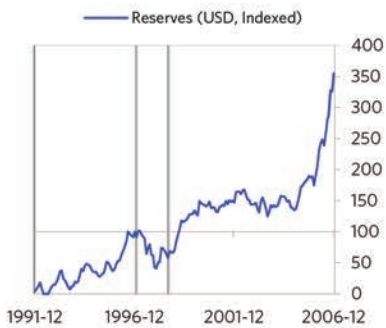


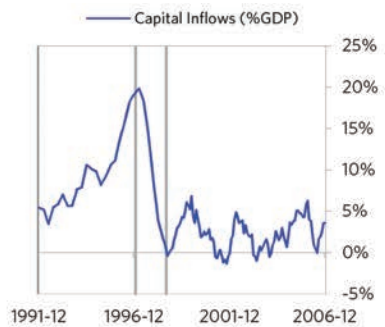
Philippines 1994–2008 Chart Deck Appendix (cont.)

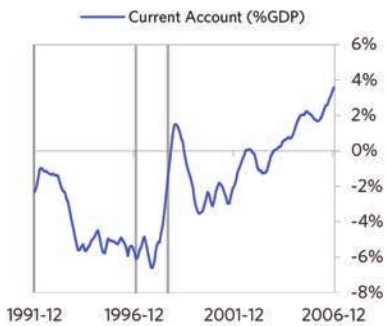
Markets

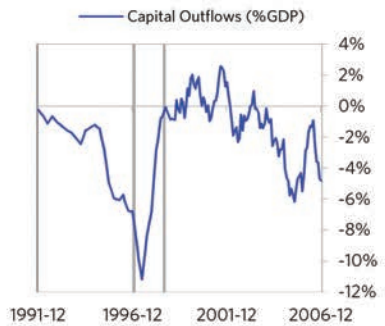


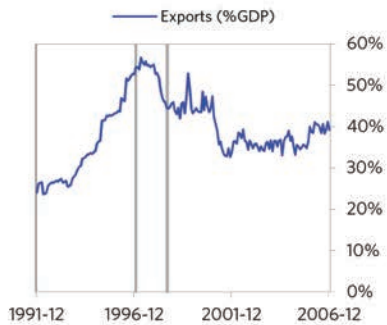
External Position











Russia 1996–2006 Case Auto-Summary

As shown in the charts to the right, Russia experienced a transitory inflationary deleveraging cycle between 1996 and 2006. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

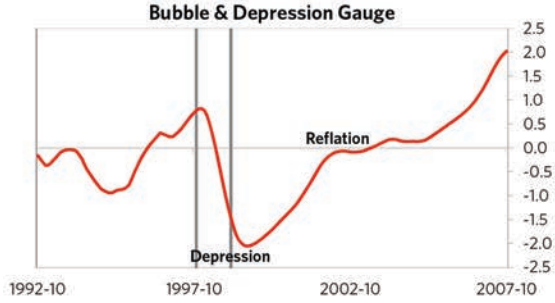
The Bubble Phase

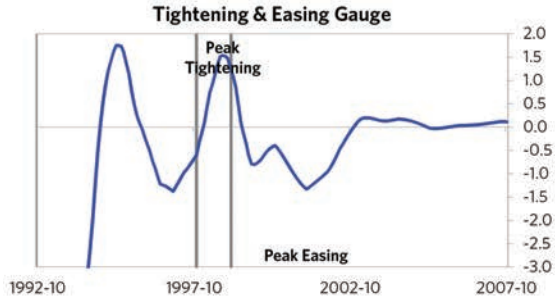
Unlike many other cases, Russia didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock driven by unsustainably strong capital inflows, with debts reaching 112% of GDP prior to the crisis. In this case, a high share of the debt was in foreign currencies (38% of GDP)—leaving Russia with a large exposure to a pullback in foreign capital. Russia also became somewhat dependent on continuous foreign financing, with investment inflows averaging 5% in the years before the crisis. Ultimately, these high debts and Russia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

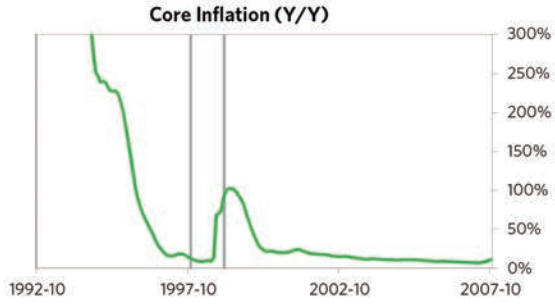
The Depression Phase

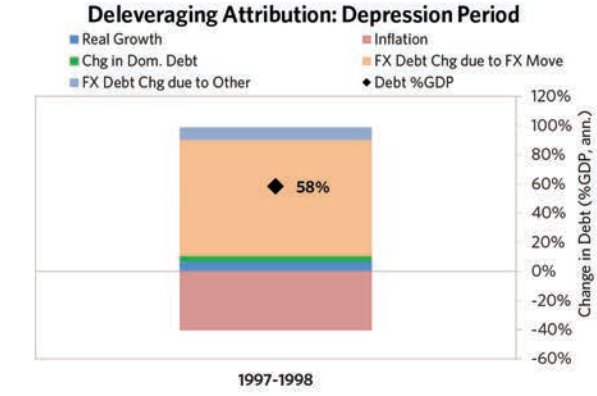
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1997 to 1998. At its pre-crisis peak, debt service reached 90% of GDP, making Russia vulnerable to a shock—which came in the form of ripples from the 1997 Asian financial crisis and falling oil prices. Russia suffered a fall in foreign funding (with capital inflows falling by 5% of GDP), leading to a tightening (policy makers hiked short rates by more than 250%) and a meaningful decline in the currency (real FX fell by 72%)—which coincided with self-reinforcing declines in GDP (falling by 10%), and in stock prices (falling by 85%). In addition, currency weakness contributed to high and rising inflation, peaking at 91% during the depression phase, which is high compared to other similar cases. That makes sense given that Russia had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Russia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 55%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Russia needed a deleveraging, its debt as a % GDP went up by 63% (58% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







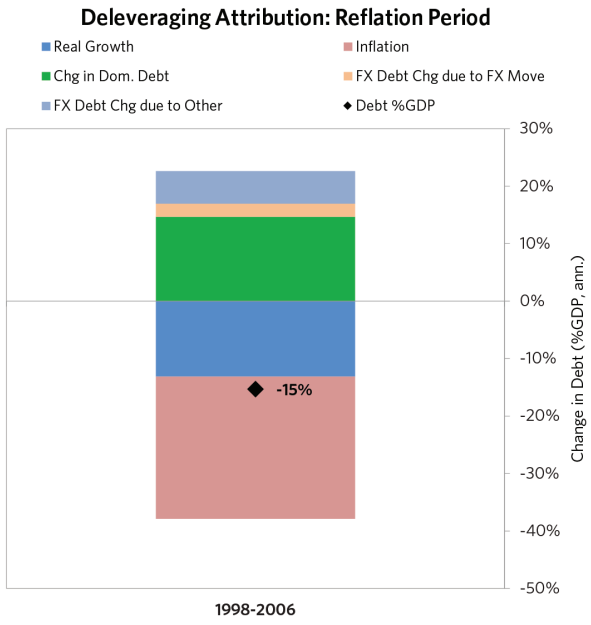


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Russia 1996–2006 Case Auto-Summary (cont.)

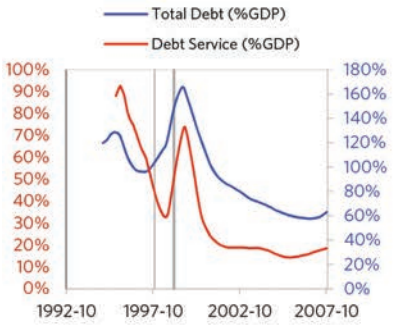
The Reflation Phase

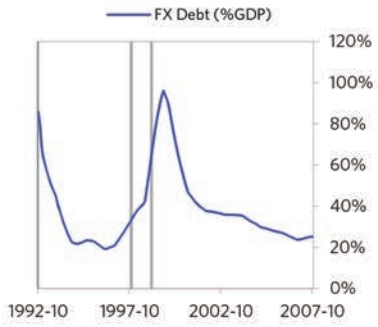
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a relatively short "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 8% of GDP), and make the currency more attractive to hold. Russia was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 119% (15% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Russia's now much lower currency (with real FX bottoming at -43% during the beautiful period) set up the country for renewed competitiveness. It took 1.8 years before real GDP reached its prior peak and equity prices in USD terms recovered within 6 years.

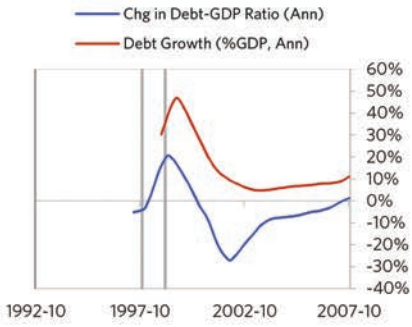


Russia 1996–2006 Chart Deck Appendix

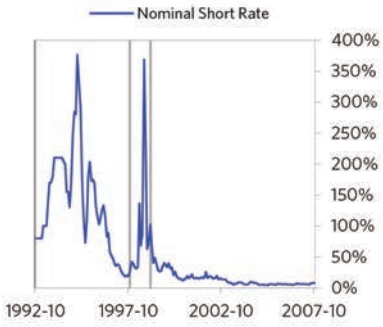
Indebtedness

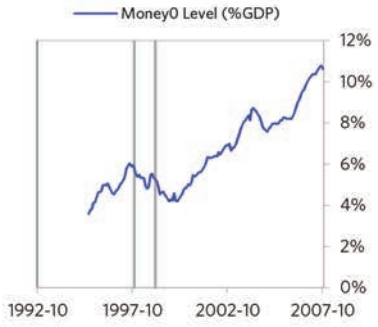


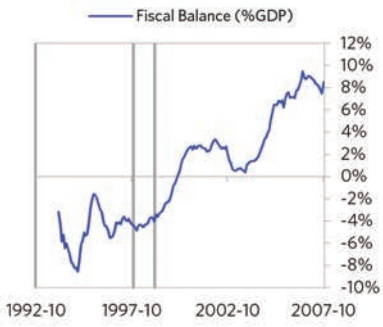




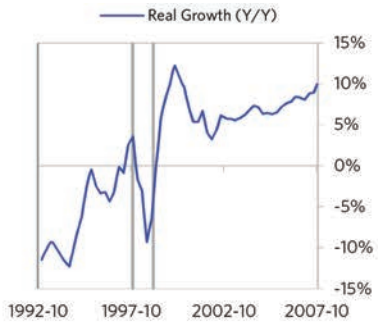
Monetary and Fiscal Policy

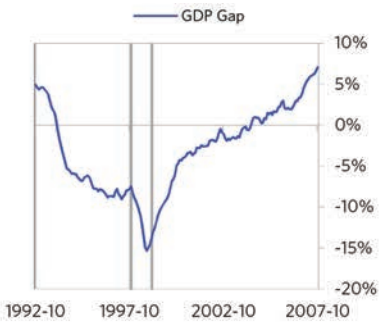


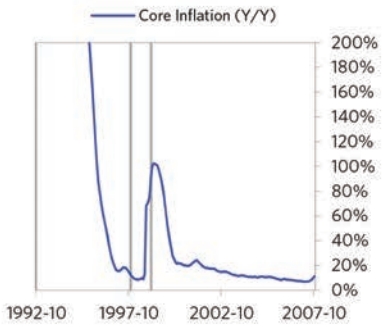


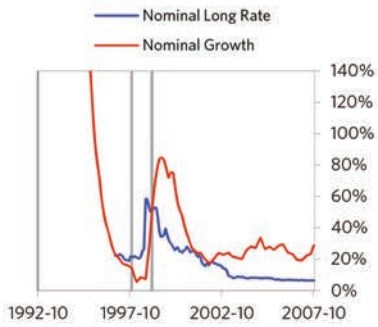


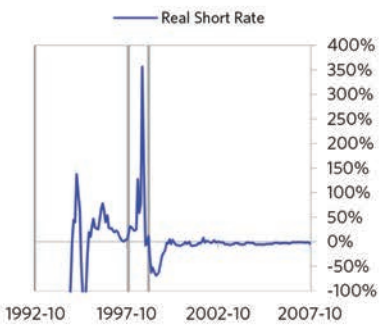
Economic Conditions





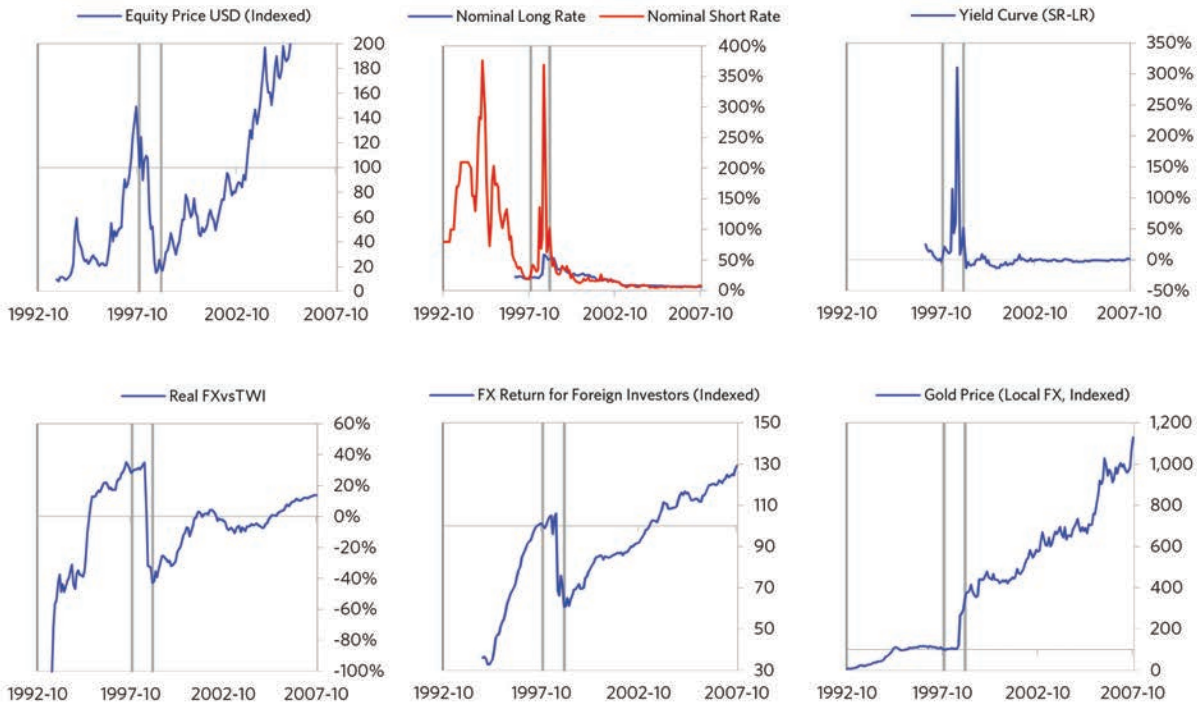




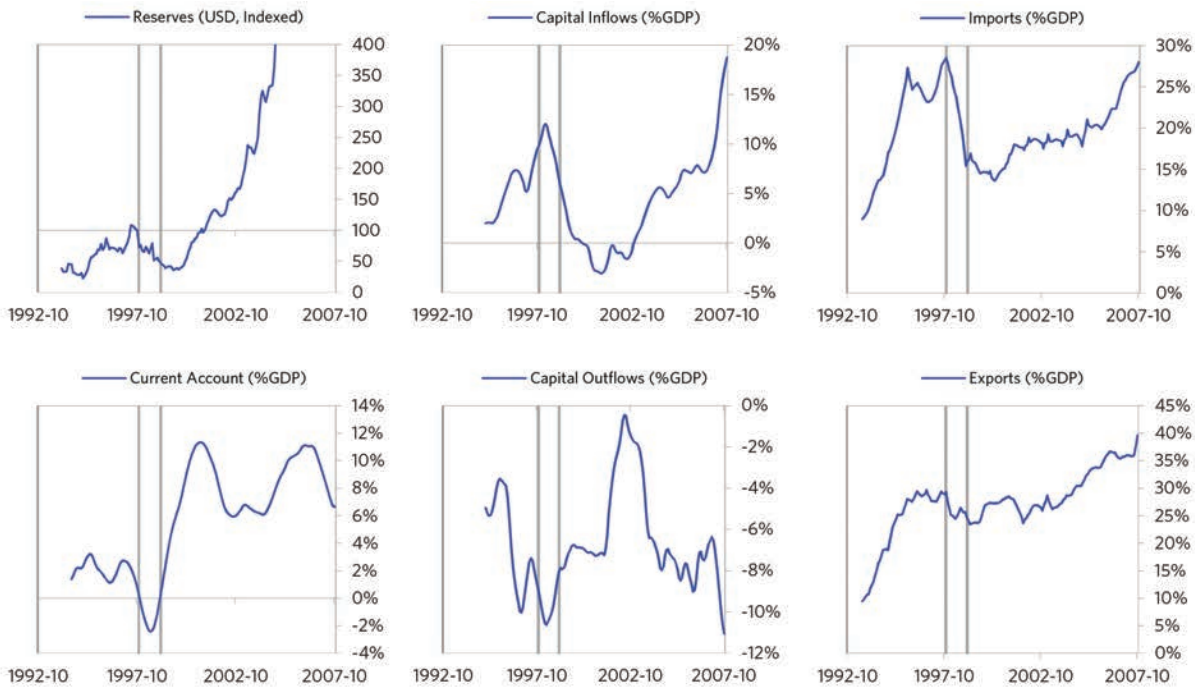


Russia 1996–2006 Chart Deck Appendix (cont.)

Markets



External Position



Colombia 1995–2008 Case Auto-Summary

As shown in the charts to the right, Colombia experienced a transitory inflationary deleveraging cycle between 1995 and 2008. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

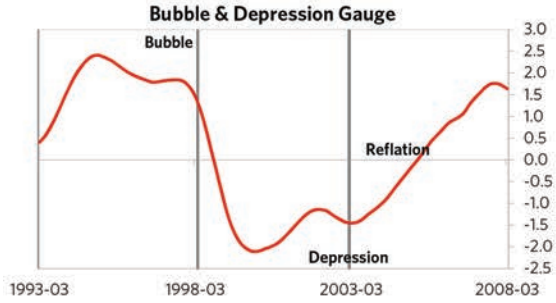
The Bubble Phase

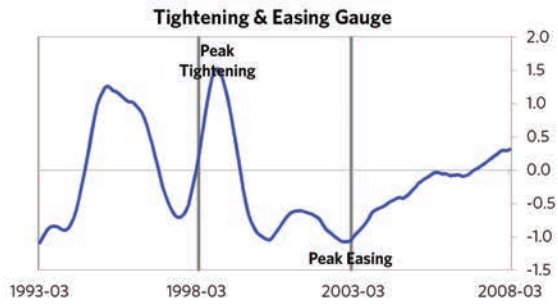
Between 1995 and 1998, Colombia experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong growth, and strong housing returns. Debts rose by 11% of GDP during the bubble to a pre-crisis peak of 58% of GDP. In this case, a high share of the debt was in foreign currencies (30% of GDP)—leaving Colombia with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were moderately strong, averaging around 8% of GDP, which helped to finance a current account deficit of 5% of GDP. Aided by that rising debt and capital, growth was strong (at 3%), while levels of economic activity were high (the GDP gap peaked at 5%). Competitiveness became an issue, as Colombia's real FX peaked at +16%. Taken together, these bubble pressures and Colombia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

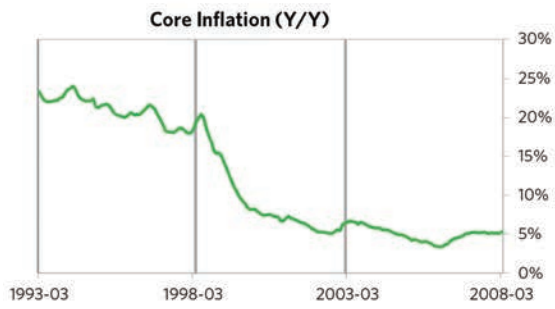
The Depression Phase

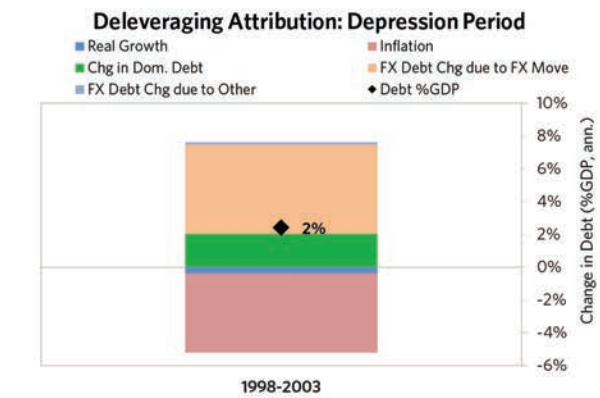
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1998 to 2003. High debt levels left Colombia vulnerable to a shock—which came in the form of the effects of the 1997 Asian financial crisis. Colombia suffered a fall in foreign funding (with capital inflows falling by 8% of GDP), leading to a tightening (policy makers hiked short rates by 20%) and a meaningful decline in the currency (real FX fell by 45%)—which coincided with self-reinforcing declines in GDP (falling by 7%), and in stock prices (falling by 66%). Unemployment rates increased by 6%, while currency weakness contributed to moderate inflation, peaking at 20% during the depression phase, which is low compared to other similar cases. That's true despite the fact that Colombia had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Colombia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 37%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Colombia needed a deleveraging, its debt as a % GDP went up by 12% (2% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







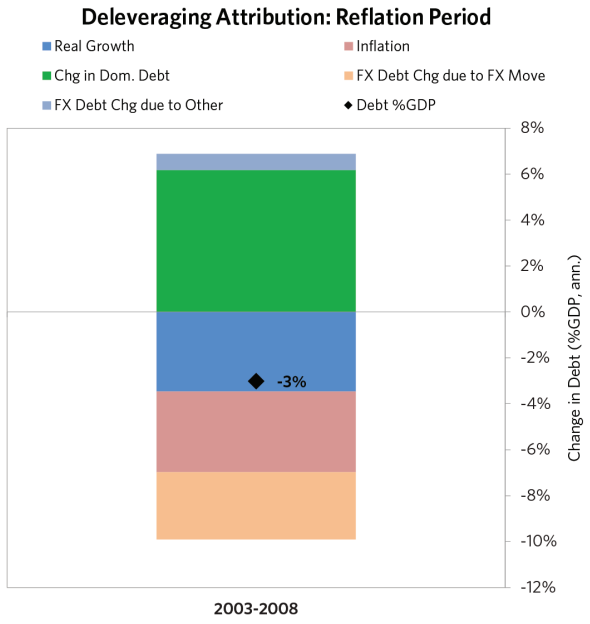


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Colombia 1995–2008 Case Auto-Summary (cont.)

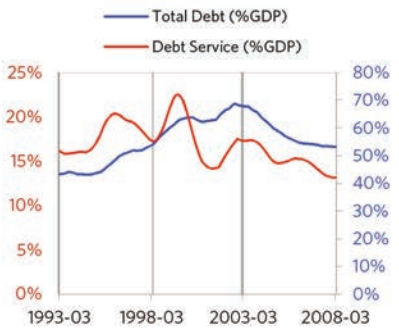
The Reflation Phase

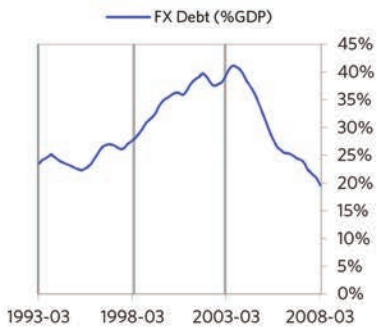
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly longer than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 5% of GDP), and make the currency more attractive to hold. Colombia was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 16% (3% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Colombia's now much lower currency (with real FX bottoming at -29% during the beautiful period) set up the country for renewed competitiveness. It took 4 years before real GDP reached its prior peak and equity prices in USD terms recovered within 7 years.

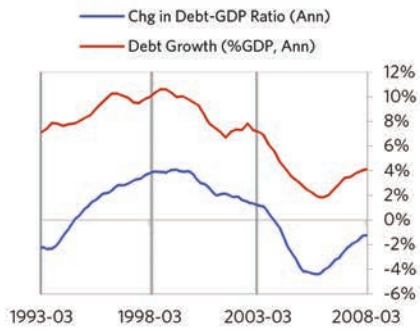


Colombia 1995–2008 Chart Deck Appendix

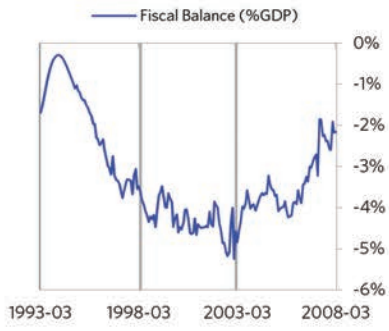
Indebtedness



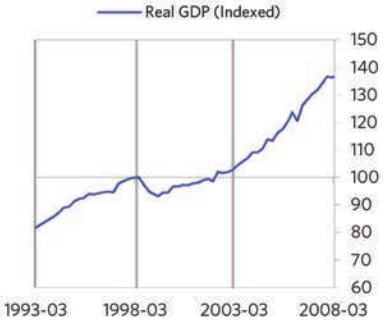


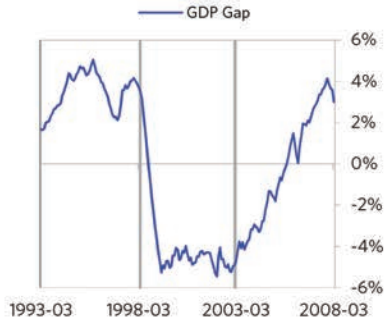


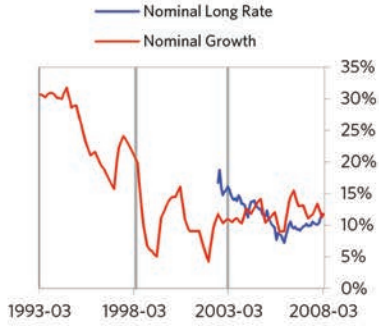
Monetary and Fiscal Policy



Economic Conditions



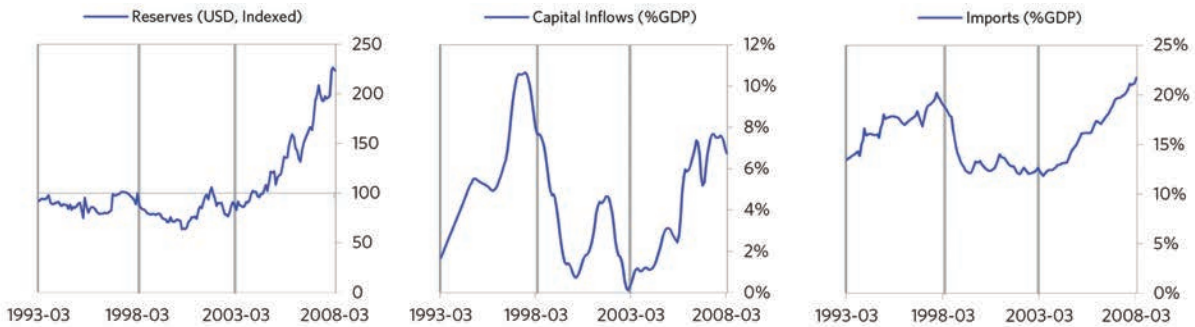


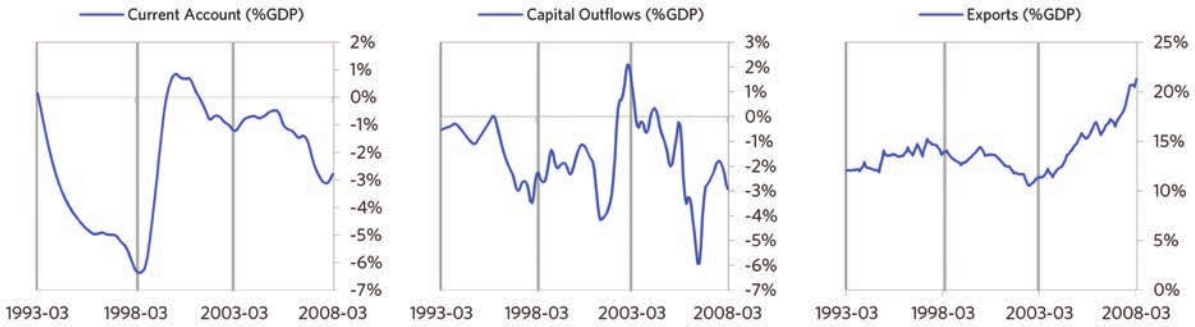


Colombia 1995–2008 Chart Deck Appendix (cont.)

Markets

External Position





Ecuador 1995–2009 Case Auto-Summary

As shown in the charts to the right, Ecuador experienced a classic inflationary deleveraging cycle between 1995 and 2009.

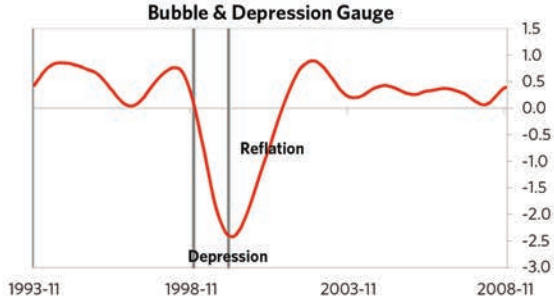
The Bubble Phase

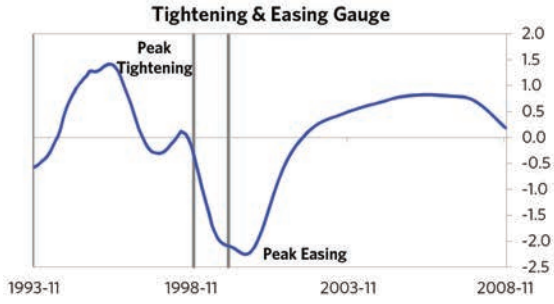
Unlike many other cases, Ecuador didn't experience a broad-based bubble in the years before the crisis, but it was tied to other countries, economies, and financial markets that were experiencing bubble-like conditions. And it did build up a substantial debt stock, with debts reaching 85% of GDP prior to the crisis. In this case, a high share of the debt was in foreign currencies (56% of GDP)—leaving Ecuador with a large exposure to a pullback in foreign capital. Ecuador also became somewhat dependent on continuous foreign financing, running a current account deficit of 4% of GDP (with investment inflows averaging 3% of GDP in the years before the crisis). Ultimately, these high debts and Ecuador's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

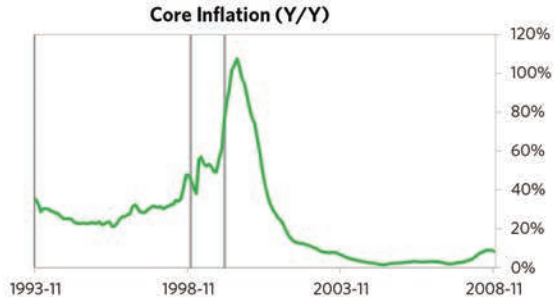
The Depression Phase

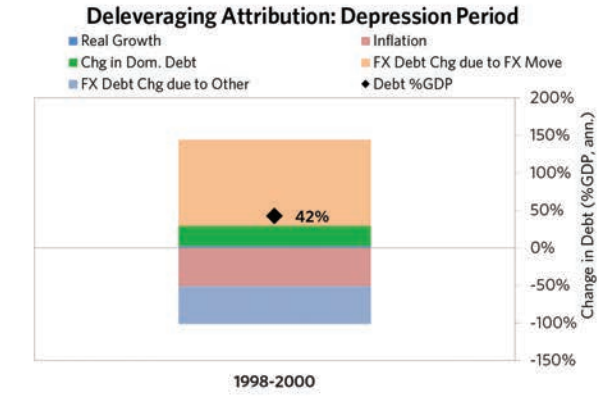
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 1998 to 2000. High debt levels left Ecuador vulnerable to a shock—which came in the form of contagion from the 1997 Asian financial crisis. Ecuador suffered a fall in foreign funding (with capital inflows falling by 11% of GDP), leading to a meaningful decline in the currency (real FX fell by 60%)—which coincided with self-reinforcing declines in GDP (falling by 6%), and in stock prices (falling by 62%). Unemployment rates increased by 2%, while currency weakness contributed to high and rising inflation, peaking at 76% during the depression phase, which is high compared to other similar cases. That makes sense given that Ecuador had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being low real short rates). Ecuador's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 61%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Ecuador needed a deleveraging, its debt as a % GDP went up by 46% (42% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









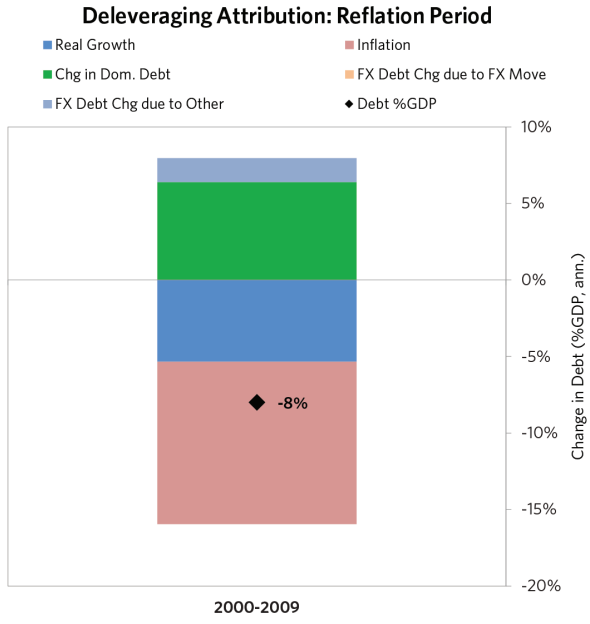
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Ecuador 1995–2009 Case Auto-Summary (cont.)

The Reflation Phase

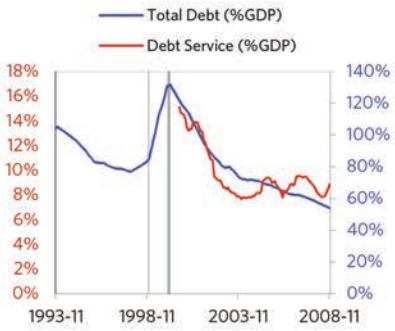
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a relatively short "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 11% of GDP), and make the currency more attractive to hold. Ecuador was very aggressive in managing its financial institutions and bad debts, pulling 9 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 79% (8% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Ecuador's now much lower currency (with real FX bottoming at -55% during the beautiful period) set up the country for renewed competitiveness. It took 1.8 years before real GDP reached its prior peak and equity prices in USD terms recovered within 5 years.

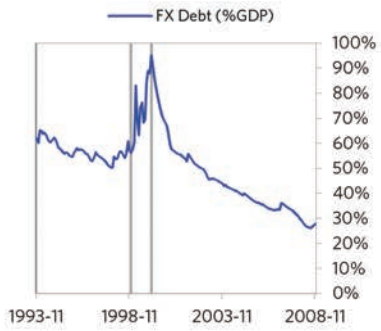
The crisis had a notable impact on the politics of Ecuador, as it helped set the stage for Lucio Gutierrez, whom many people consider a populist leader, to take power in 2003.

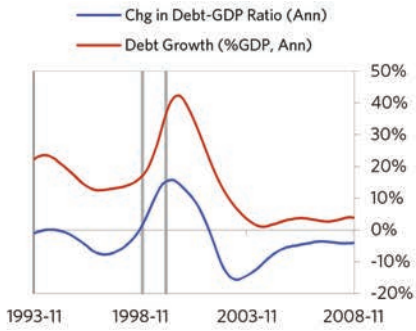


Ecuador 1995–2009 Chart Deck Appendix

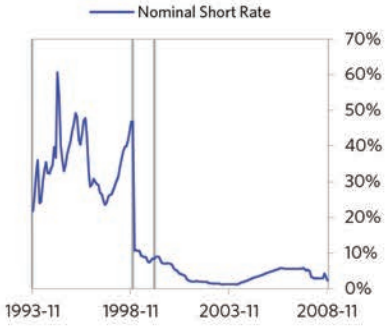
Indebtedness

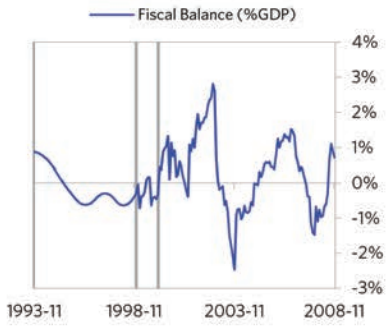




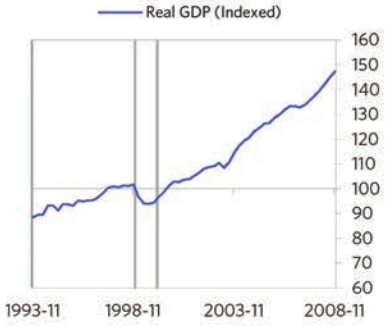


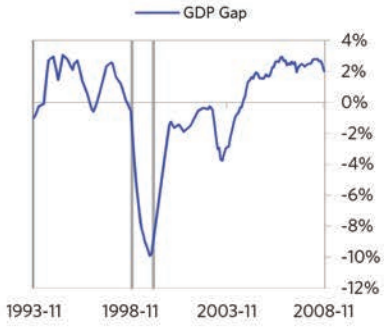
Monetary and Fiscal Policy

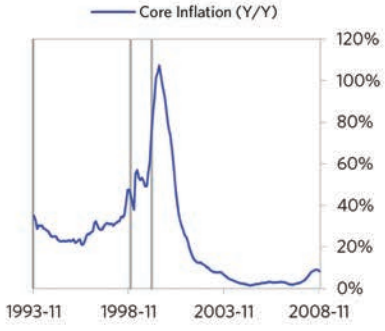


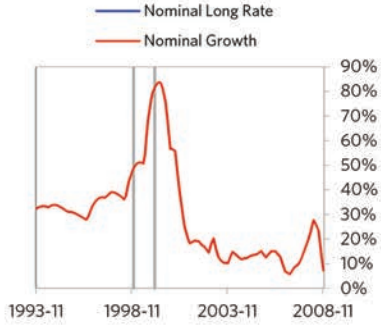


Economic Conditions



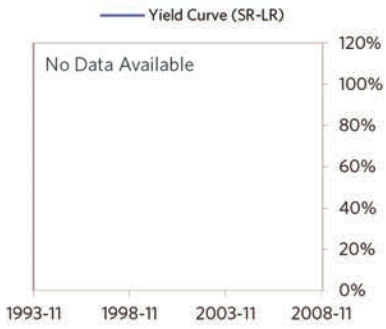




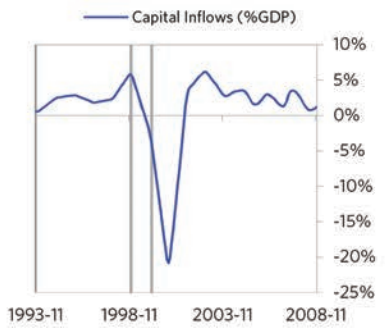


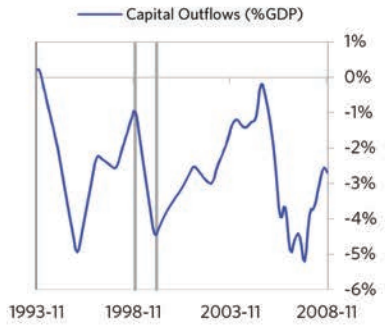
Ecuador 1995–2009 Chart Deck Appendix (cont.)

Markets



External Position





Turkey 1997–2003 Case Auto-Summary

As shown in the charts to the right, Turkey experienced a classic inflationary deleveraging cycle between 1997 and 2003.

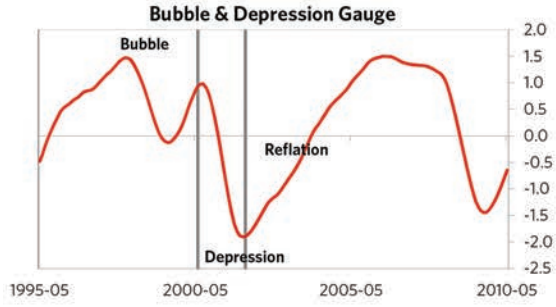
The Bubble Phase

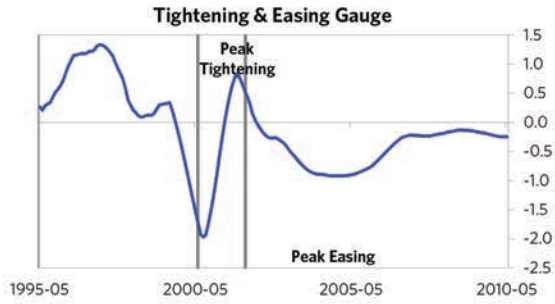
Between 1997 and 2000, Turkey experienced a bubble that was driven by a self-reinforcing cycle of rising debt, strong equity returns, and strong growth. Debts rose by 17% of GDP during the bubble to a pre-crisis peak of 60% of GDP. In this case, a high share of the debt was in foreign currencies (46% of GDP)—leaving Turkey with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were low but positive, averaging around 3% of GDP. Aided by that rising debt and capital, growth was moderate (at 2%), while levels of economic activity were high (the GDP gap peaked at 9%). Furthermore, strong asset returns (equities averaged 22% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Turkey's dependence on foreign financing created an unsustainable situation.

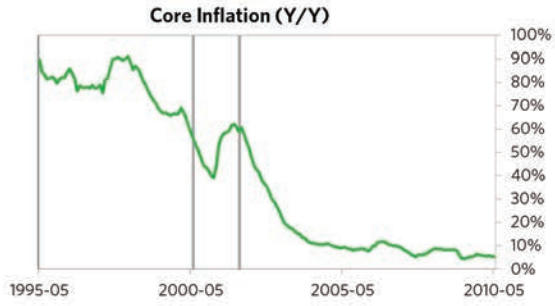
The Depression Phase

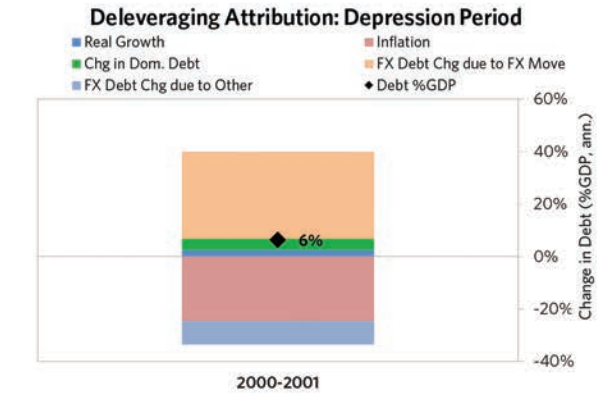
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 2000 to 2001. At its pre-crisis peak, debt service reached 30% of GDP, making Turkey vulnerable to a shock—which came in the form of political turmoil and violence. Turkey suffered a fall in foreign funding (with capital inflows falling by 10% of GDP), leading to a tightening (policy makers hiked short rates by 157%) and a meaningful decline in the currency (real FX fell by 12%)—which coincided with self-reinforcing declines in GDP (falling by 10%), and in stock prices (falling by 78%). Unemployment rates increased by 3%, while currency weakness contributed to high and rising inflation, peaking at 62% during the depression phase, which is high compared to other similar cases. That makes sense given that Turkey had most of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Turkey's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 100%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Turkey needed a deleveraging, its debt as a % GDP went up by 9% (6% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 11% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







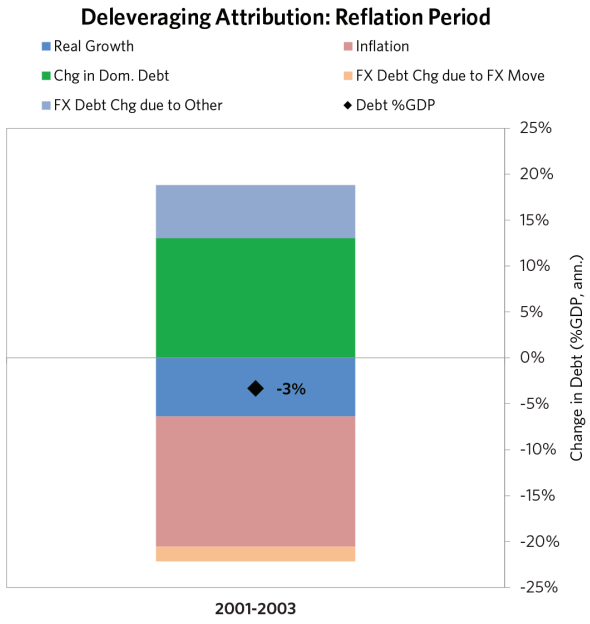


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Turkey 1997–2003 Case Auto-Summary (cont.)

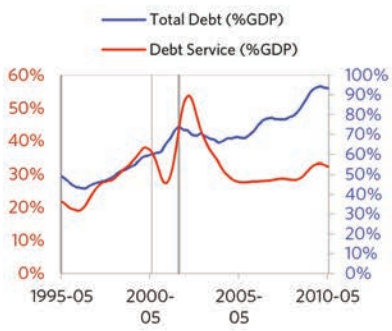
The Reflation Phase

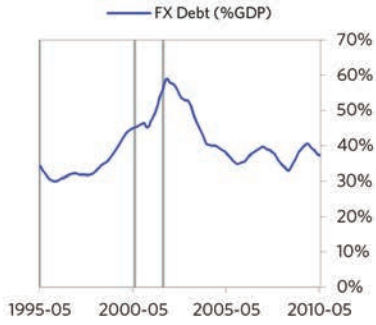
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 5% of GDP), and make the currency more attractive to hold. Turkey was very aggressive in managing its financial institutions and bad debts, pulling 7 out of 9 classic policy levers. In particular, it nationalized banks, provided liquidity, and directly purchased troubled assets. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 6% (3% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Turkey's now lower currency (with real FX bottoming at -18% during the beautiful period) set up the country for renewed competitiveness. It took 2 years before real GDP reached its prior peak and equity prices in USD terms recovered within 6 years.

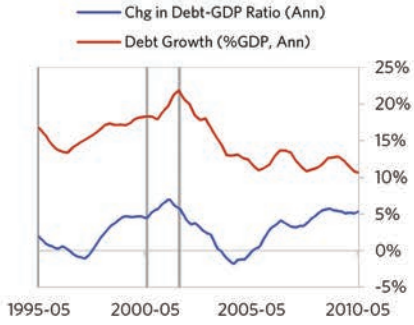


Turkey 1997–2003 Chart Deck Appendix

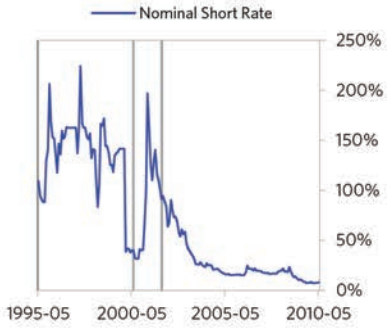
Indebtedness

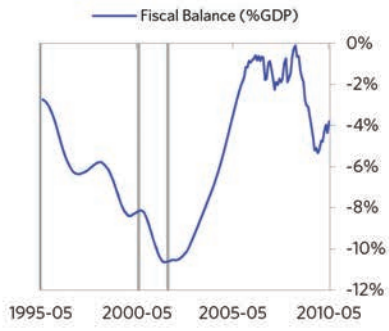




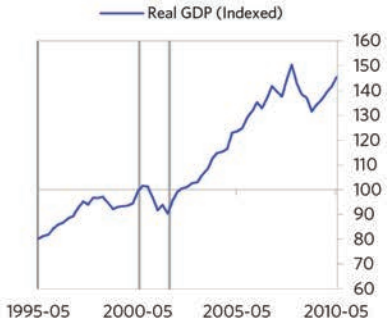


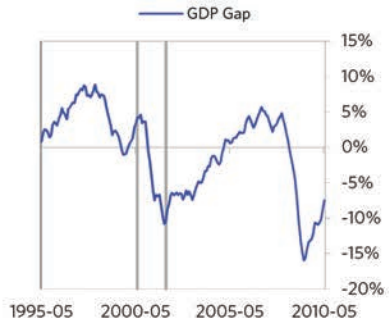
Monetary and Fiscal Policy

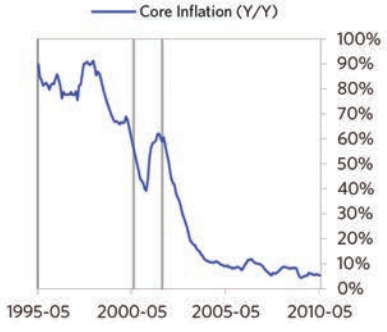


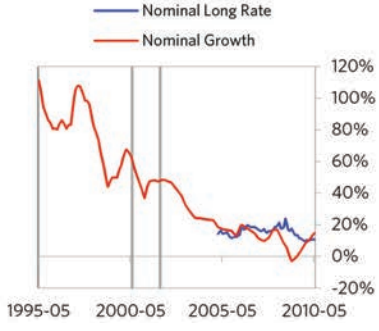


Economic Conditions



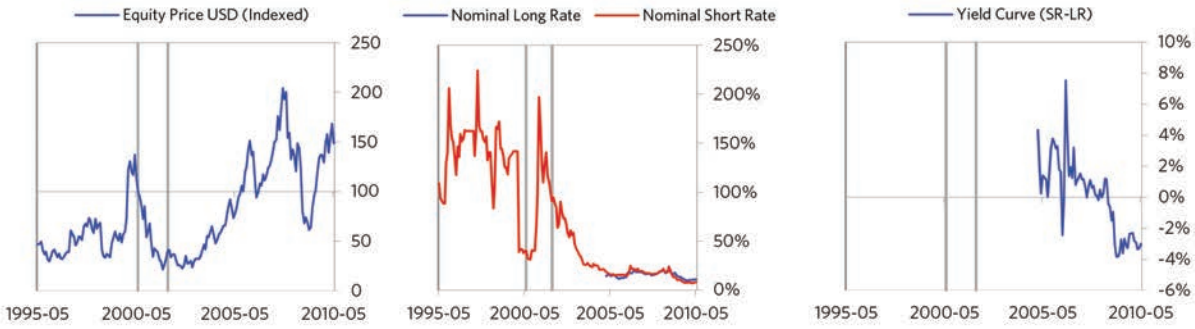


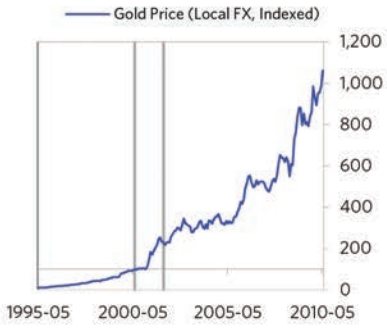




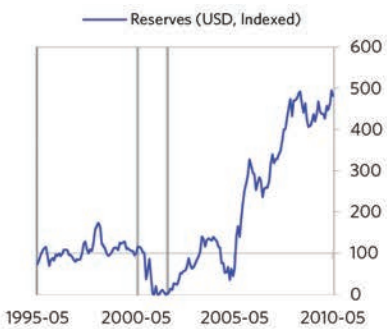
Turkey 1997–2003 Chart Deck Appendix (cont.)

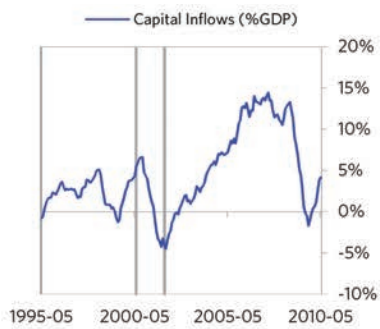
Markets

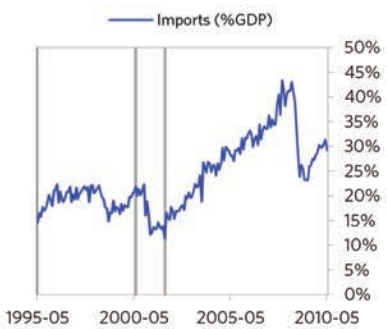


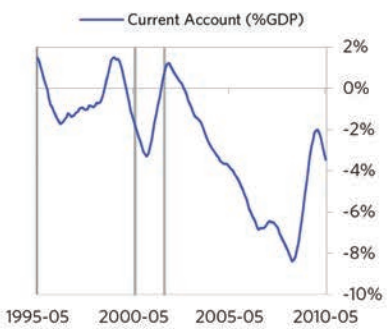


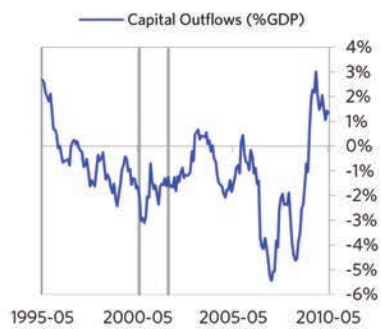
External Position











Argentina 1998–2012 Case Auto-Summary

As shown in the charts to the right, Argentina experienced a transitory inflationary deleveraging cycle between 1998 and 2012. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

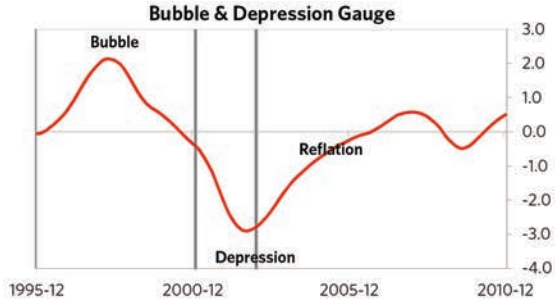
The Bubble Phase

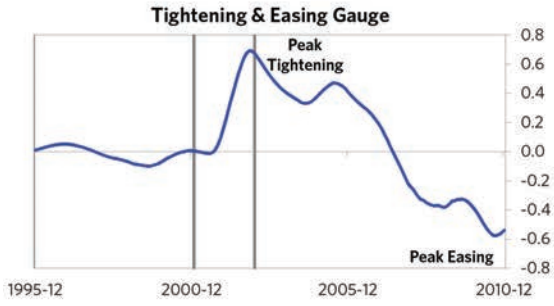
Between 1998 and 2001, Argentina experienced a bubble that was most characterized by unsustainably strong capital inflows and strong currency returns. By the bubble's end, debts had reached a pre-crisis peak of 78% of GDP. In this case, a high share of the debt was in foreign currencies (47% of GDP)—leaving Argentina with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 11% of GDP, which helped to finance a current account deficit of 5% of GDP. Growth was weak (at 0%), while levels of economic activity were high (the GDP gap peaked at 9%). Competitiveness became an issue, as Argentina's real FX peaked at +39%. Taken together, these bubble pressures and Argentina's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

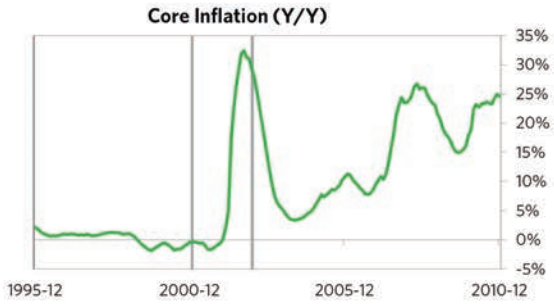
The Depression Phase

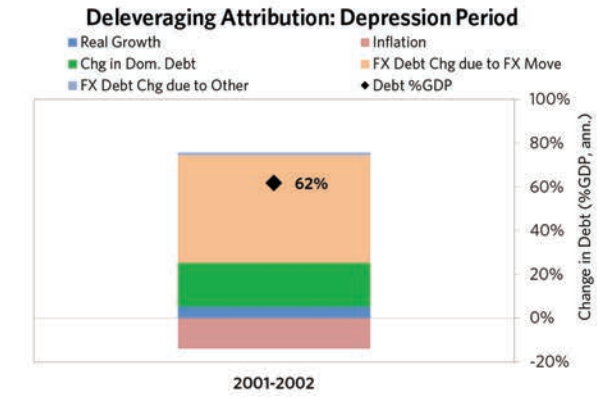
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 2001 to 2002. High debt levels left Argentina vulnerable to a shock—which came in the form of ripples from the late 1990s crises in other EM countries. Argentina suffered a fall in foreign funding (with capital inflows falling by 10% of GDP), leading to a tightening (policy makers hiked short rates by 173%) and a meaningful decline in the currency (real FX fell by 77%)—which coincided with self-reinforcing declines in GDP (falling by 15%), and in stock prices (falling by 82%). Unemployment rates increased by 3%, while currency weakness contributed to high and rising inflation, peaking at 32% during the depression phase, which is normal compared to other similar cases. That makes sense given that Argentina had around half of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Argentina's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 66%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Argentina needed a deleveraging, its debt as a % GDP went up by 118% (62% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 4% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.









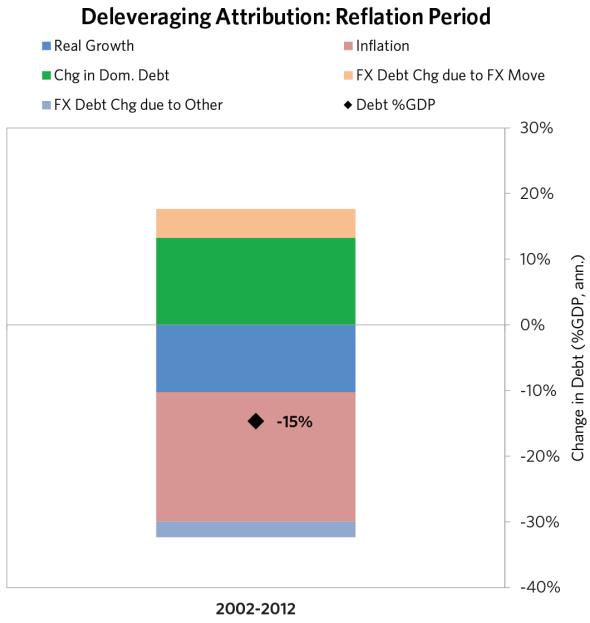
*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Argentina 1998–2012 Case Auto-Summary (cont.)

The Reflation Phase

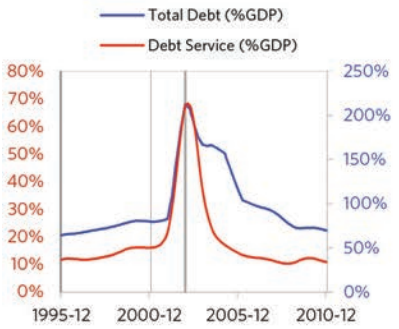
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they let their currency go and allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, they abandoned the currency peg and, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 7% of GDP), and make the currency more attractive to hold. Argentina was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. It also benefited from an IMF assistance program and enacted structural reforms designed to increase labor market flexibility. As shown in the attribution chart to the right, debt as a % of GDP fell by 140% (15% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Argentina's now much lower currency (with real FX bottoming at -42% during the beautiful period) set up the country for renewed competitiveness. It took 5 years before real GDP reached its prior peak and equity prices in USD terms recovered within 7 years.

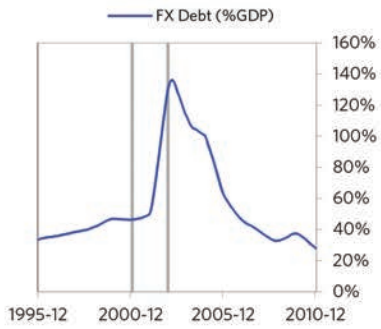
The crisis had a notable impact on the politics of Argentina, as it helped set the stage for Eduardo Duhalde, whom many people consider a populist leader, to take power.

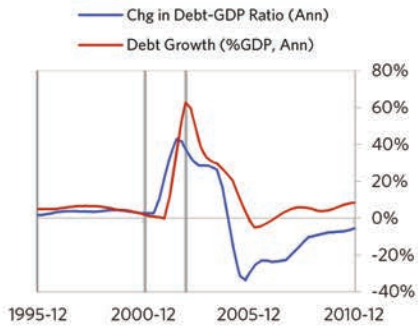


Argentina 1998–2012 Chart Deck Appendix

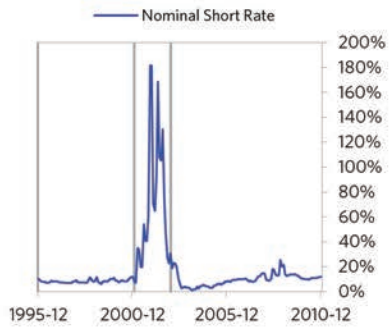
Indebtedness

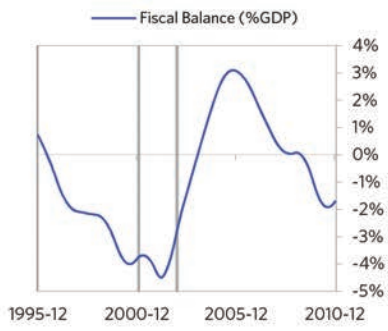




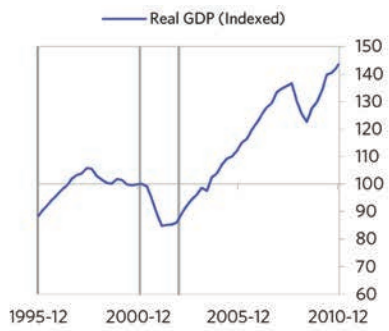


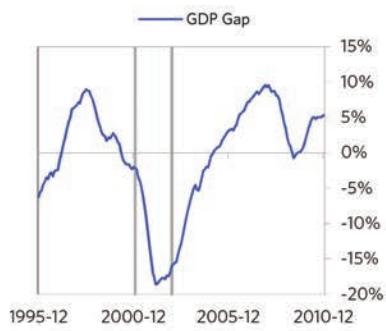
Monetary and Fiscal Policy

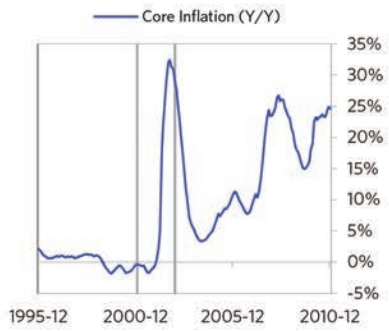


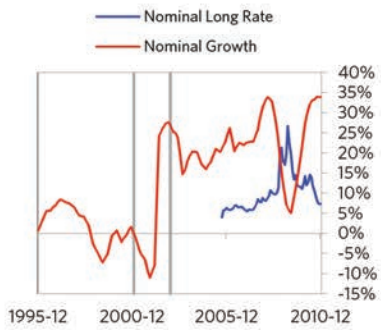


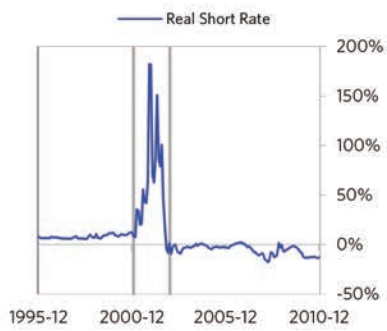
Economic Conditions





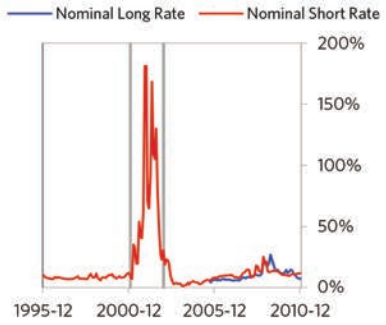


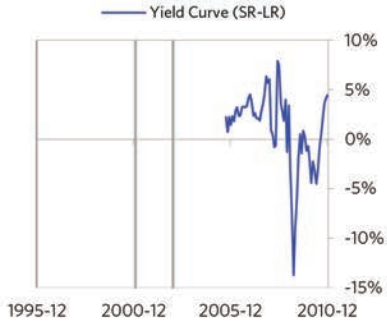


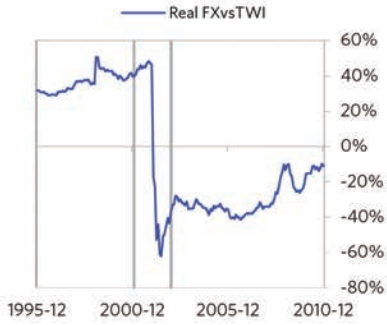


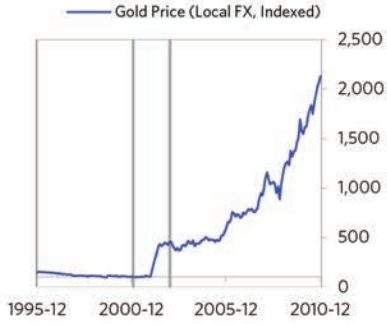
Argentina 1998–2012 Chart Deck Appendix (cont.)

Markets

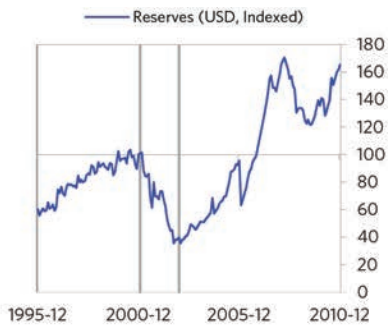


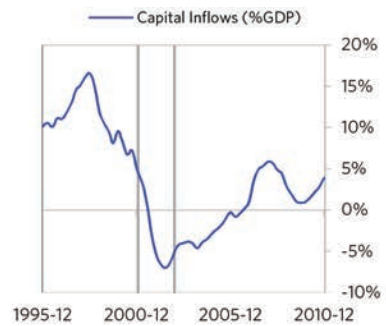


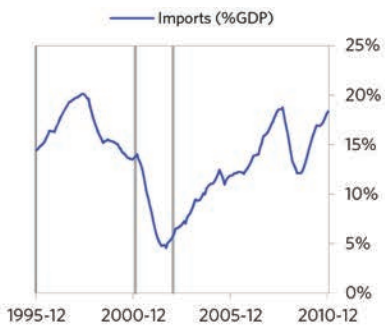


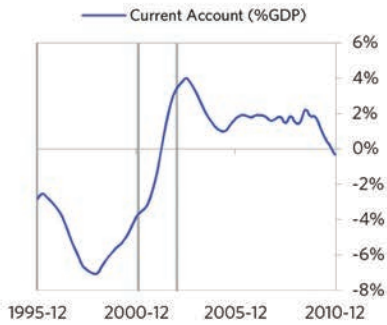


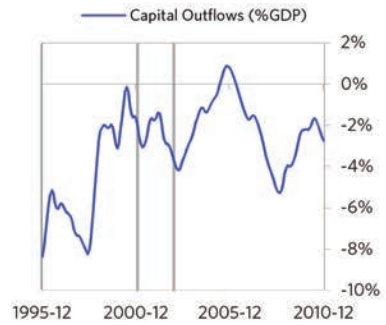
External Position

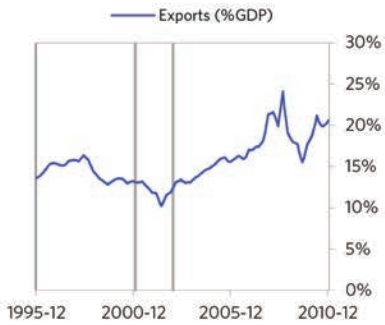












Iceland 2005–2016 Case Auto-Summary

As shown in the charts to the right, Iceland experienced a transitory inflationary deleveraging cycle between 2005 and 2016. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

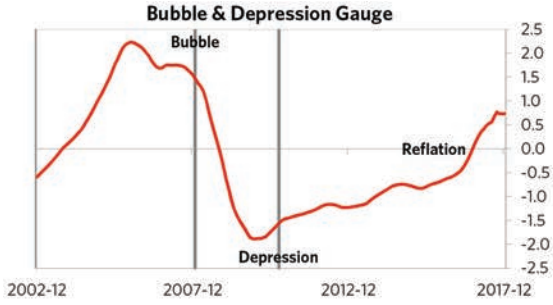
The Bubble Phase

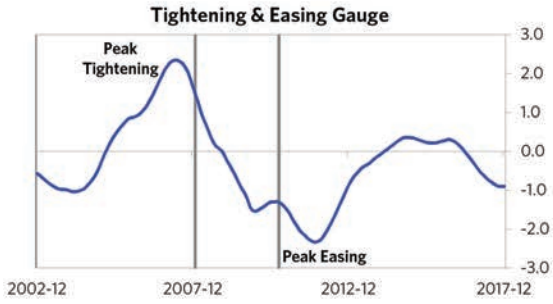
Between 2005 and 2008, Iceland experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong equity returns, and strong housing returns. Debts rose by 565% of GDP during the bubble to a pre-crisis peak of 1173% of GDP. In this case, a high share of the debt was in foreign currencies (691% of GDP)—leaving Iceland with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 37% of GDP, which helped to finance a current account deficit of 18% of GDP. Aided by that rising debt and capital, growth was strong (at 7%). Furthermore, strong asset returns (equities averaged 12% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Iceland's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

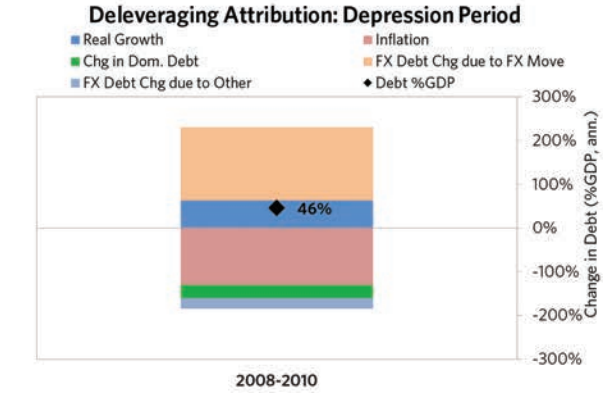
The Depression Phase

Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 2008 to 2010. High debt levels left Iceland vulnerable to a shock—which came in the form of the 2008 global financial crisis. Iceland suffered a fall in foreign funding (with capital inflows falling by 49% of GDP), leading to a tightening (policy makers hiked short rates by 4%) and a meaningful decline in the currency (real FX fell by 29%)—which coincided with self-reinforcing declines in GDP (falling by 11%), in stock prices (falling by 96%) and in home prices (falling by 15%). Unemployment rates increased by 5%, while currency weakness contributed to moderate inflation, peaking at 18% during the depression phase, which is low compared to other similar cases. That makes sense given that Iceland had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being high foreign-denominated debts). Iceland's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 18%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Iceland needed a deleveraging, its debt as a % GDP went up by 122% (46% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 5% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.





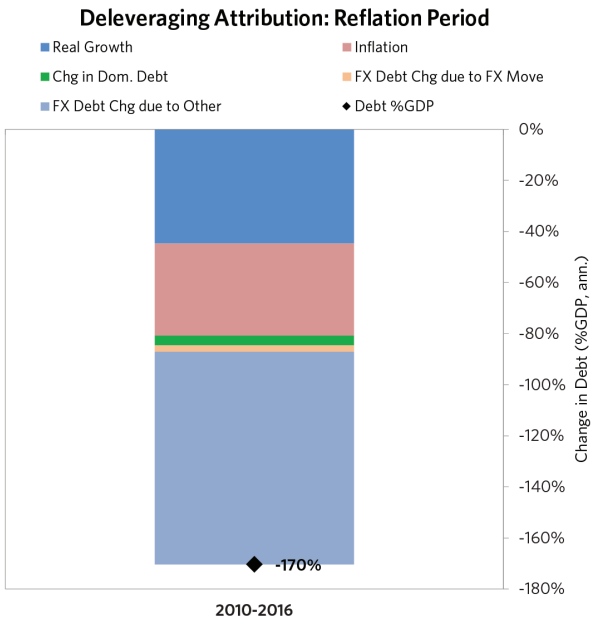


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Iceland 2005–2016 Case Auto-Summary (cont.)

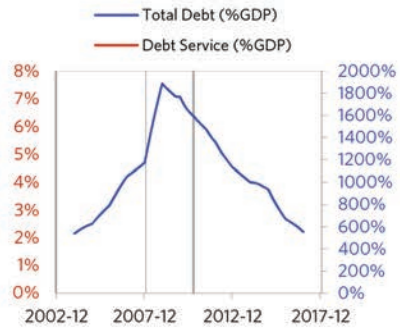
The Reflation Phase

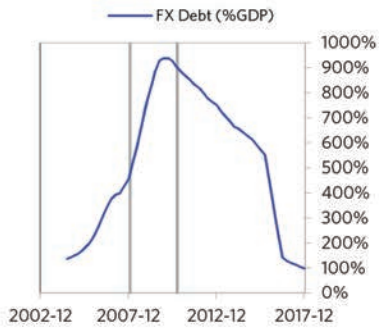
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, after a slightly longer than average "ugly" phase, policy makers allowed enough tightening to flow through to reduce spending on imports (the current account balance improved by 13% of GDP), and make the currency more attractive to hold. Iceland was very aggressive in managing its financial institutions and bad debts, pulling 6 out of 9 classic policy levers. In particular, it nationalized banks and provided liquidity. It also benefited from an IMF assistance program. As shown in the attribution chart to the right, debt as a % of GDP fell by 1,037% (170% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came from a balanced mix of outright debt reduction as well as rising income, driven primarily by higher real growth. Meanwhile, Iceland's now much lower currency (with real FX bottoming at -22% during the beautiful period) set up the country for renewed competitiveness. It took 8 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

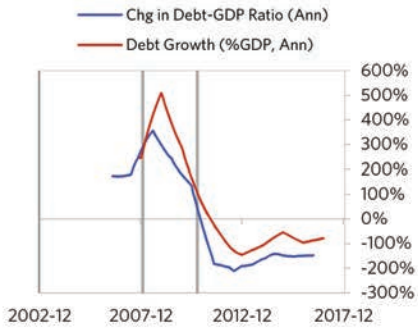


Iceland 2005–2016 Chart Deck Appendix

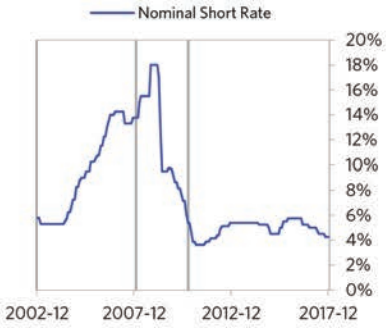
Indebtedness

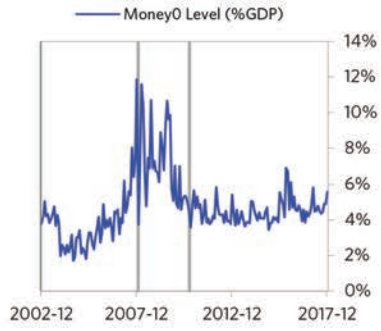


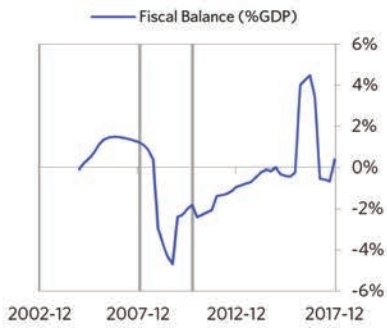




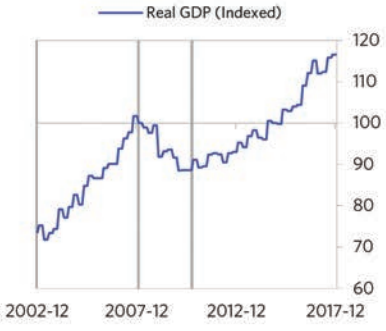
Monetary and Fiscal Policy

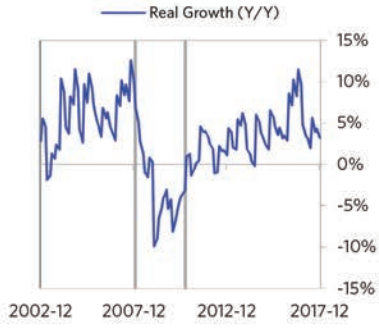


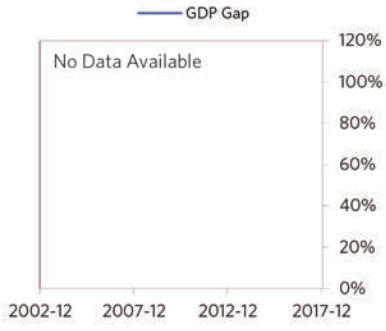


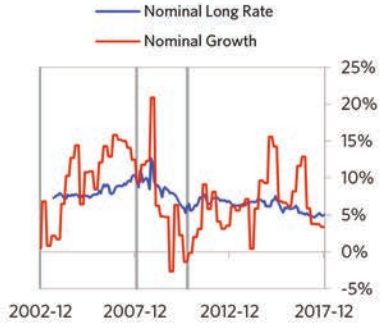


Economic Conditions



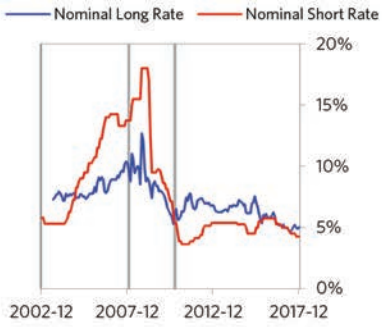


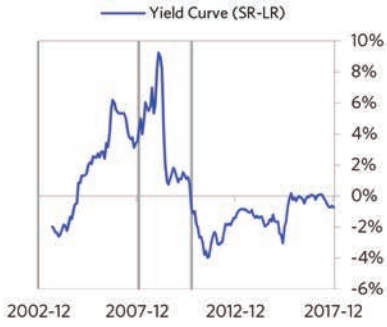


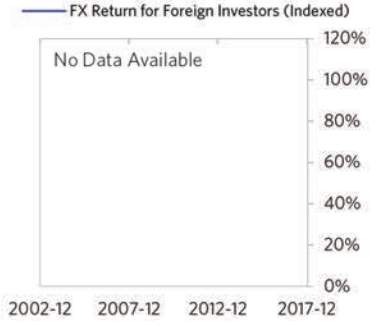


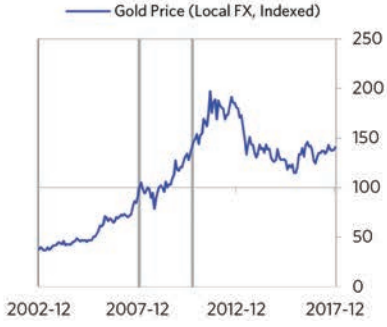
Iceland 2005–2016 Chart Deck Appendix (cont.)

Markets

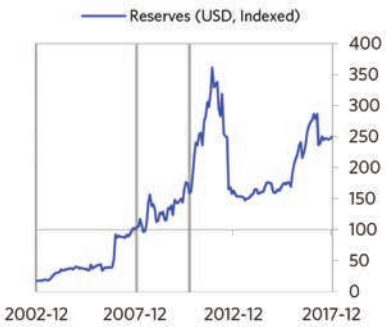


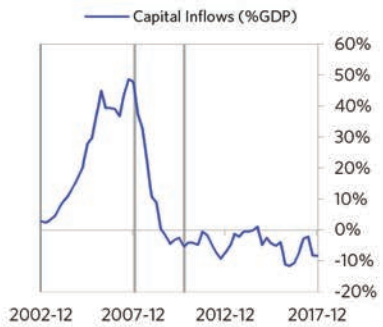


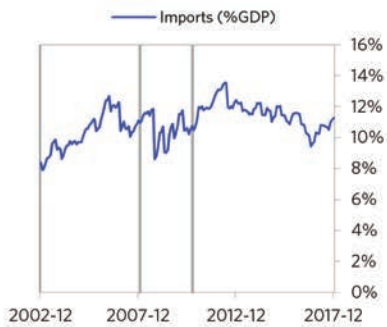


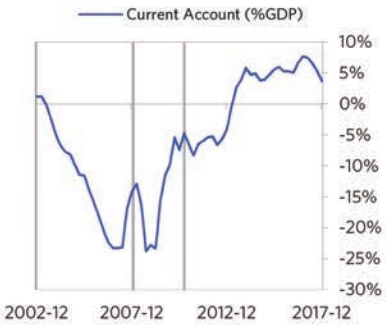


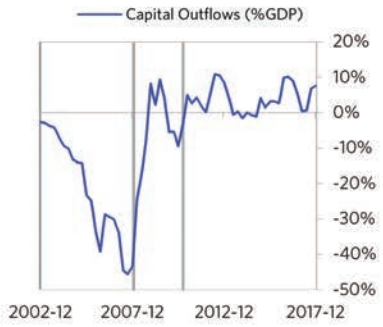
External Position

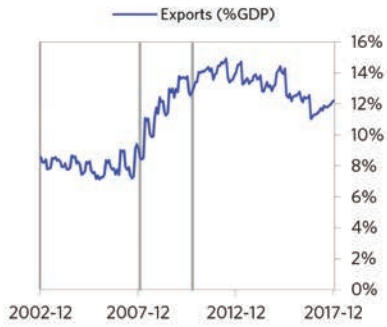












Russia 2005–2011 Case Auto-Summary

As shown in the charts to the right, Russia experienced a transitory inflationary deleveraging cycle between 2005 and 2011. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

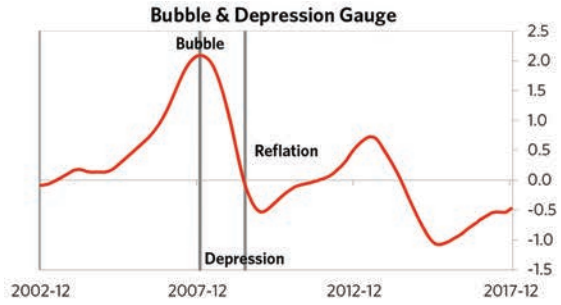
The Bubble Phase

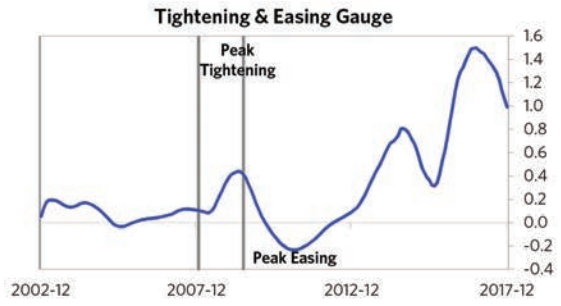
Between 2005 and 2008, Russia experienced a bubble that was driven by a self-reinforcing cycle of unsustainably strong capital inflows, rising debt, strong growth and strong asset returns. By the bubble's end, debts had reached a pre-crisis peak of 66% of GDP. In this case, a high share of the debt was in foreign currencies (21% of GDP)—leaving Russia with a large exposure to a pullback in foreign capital. During the bubble phase, investment inflows were strong, averaging around 10% of GDP. Aided by that rising debt and capital, growth was strong (at 8%), while levels of economic activity were high (the GDP gap peaked at 8%). Furthermore, strong asset returns (equities averaged 46% annualized returns over the bubble period) encouraged more borrowing and helped to stimulate growth. Taken together, these bubble pressures and Russia's dependence on foreign financing, combined with the weakened conditions of related countries, created an unsustainable situation.

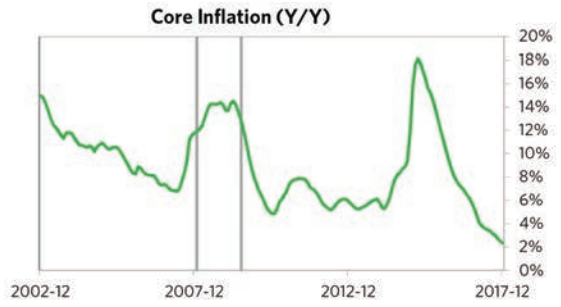
The Depression Phase

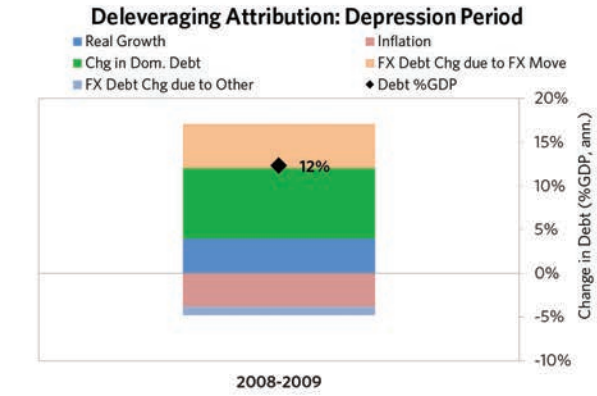
Eventually the dynamic turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 2008 to 2009. High debt levels left Russia vulnerable to a shock—which came in the form of the 2008 global financial crisis and an accompanying collapse in oil prices. Russia suffered a fall in foreign funding (with capital inflows falling by 21% of GDP), leading to a tightening (policy makers hiked short rates by 19%) and a meaningful decline in the currency (real FX fell by 21%)—which coincided with self-reinforcing declines in GDP (falling by 8%), and in stock prices (falling by 71%). Unemployment rates increased by 3%, while currency weakness contributed to moderate and rising inflation, peaking at 15% during the depression phase, which is low compared to other similar cases. That makes sense given that Russia had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Russia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 44%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Russia needed a deleveraging, its debt as a % GDP went up by 17% (12% annualized), in part because the currency fell (which increased the burden of foreign-denominated debt).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







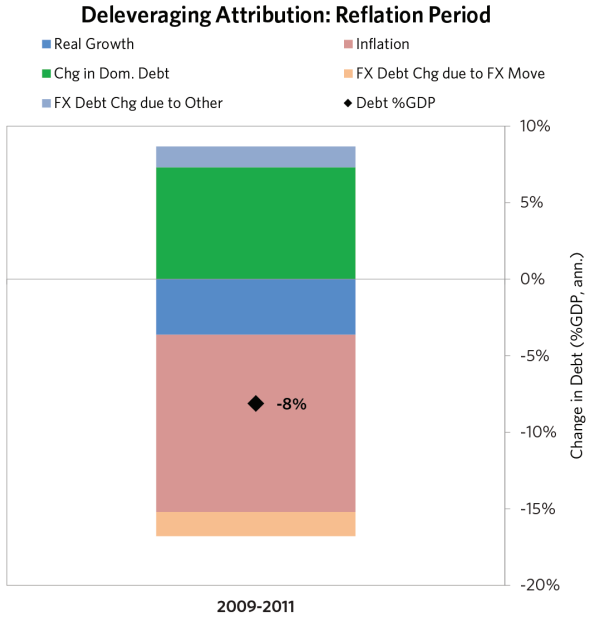


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Russia 2005–2011 Case Auto-Summary (cont.)

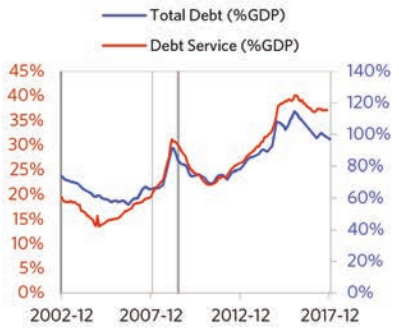
The Reflation Phase

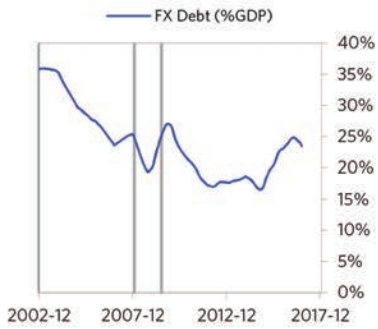
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to make the currency more attractive to hold. Russia was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. As shown in the attribution chart to the right, debt as a % of GDP fell by 14% (8% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came mostly from nominal income rising. Meanwhile, Russia's now much lower currency (with real FX bottoming at 11% during the beautiful period) set up the country for renewed competitiveness. It took 3 years before real GDP reached its prior peak, but equity prices in USD terms haven't yet fully recovered.

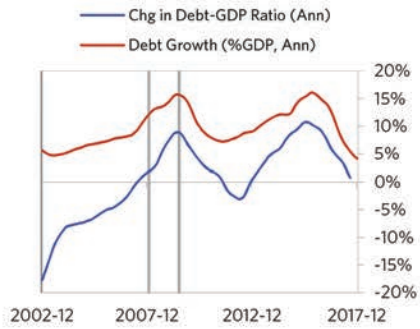


Russia 2005–2011 Chart Deck Appendix

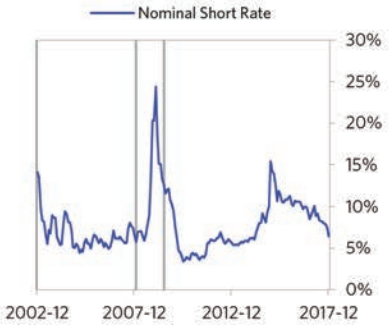
Indebtedness

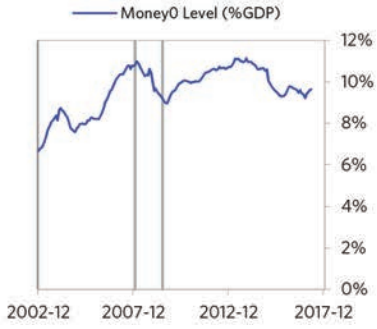


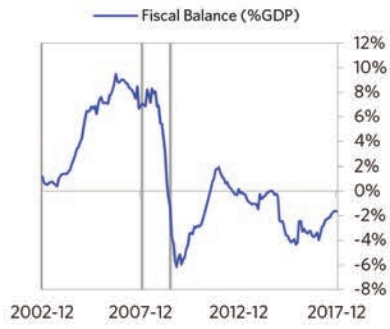




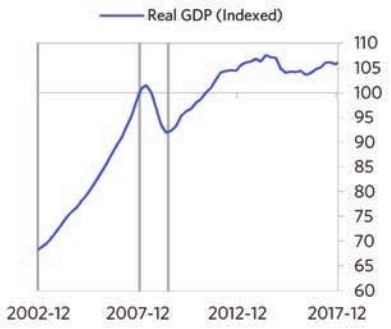
Monetary and Fiscal Policy

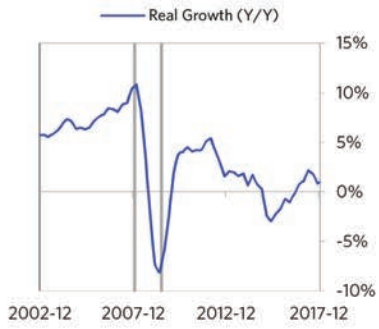


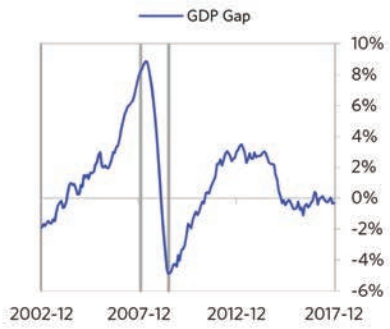


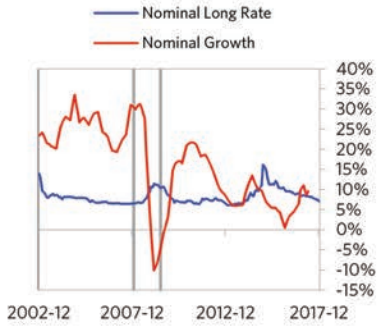


Economic Conditions



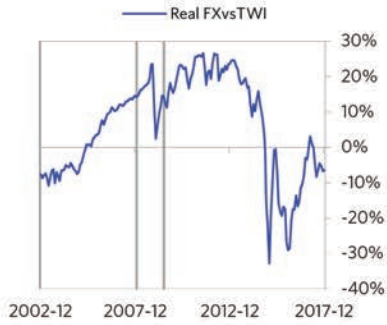


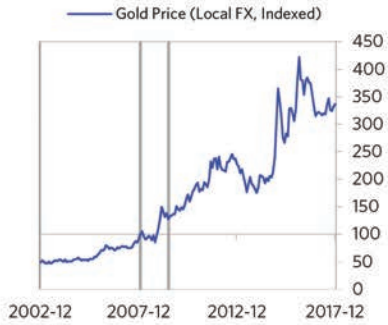




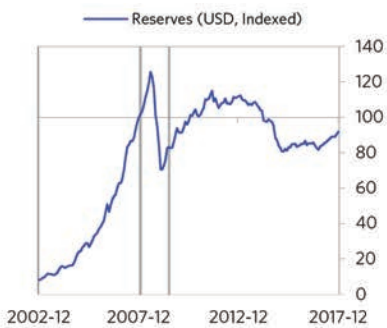
Russia 2005–2011 Chart Deck Appendix (cont.)

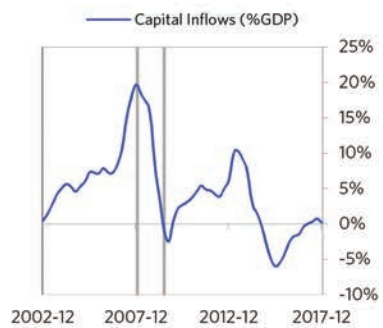
Markets

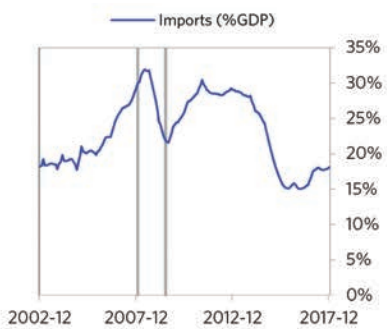


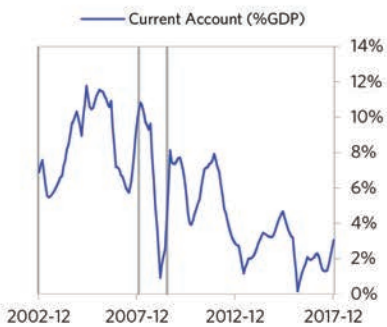


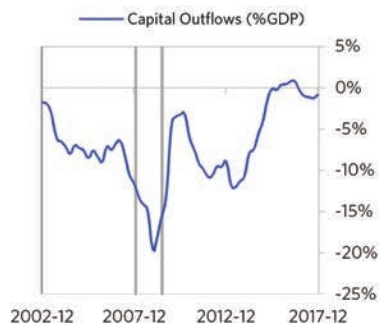
External Position

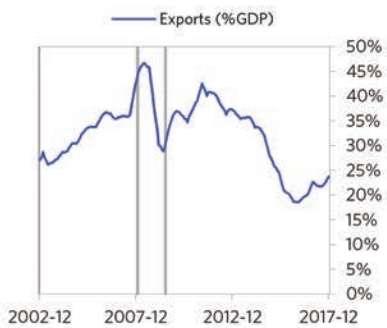












Russia 2012–2016 Case Auto-Summary

As shown in the charts to the right, Russia experienced a transitory inflationary deleveraging cycle between 2012 and 2016. This is also a classic example of a country "letting its currency go" in the face of external pressures, which produces some temporary inflation but ultimately gives policy makers more flexibility to set interest rates.

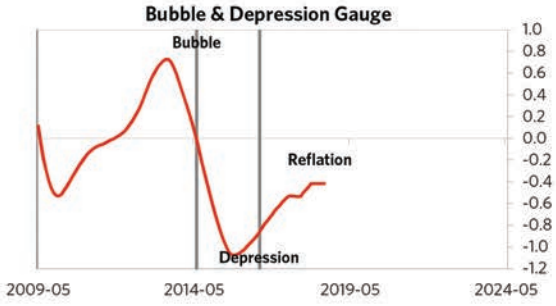
The Bubble Phase

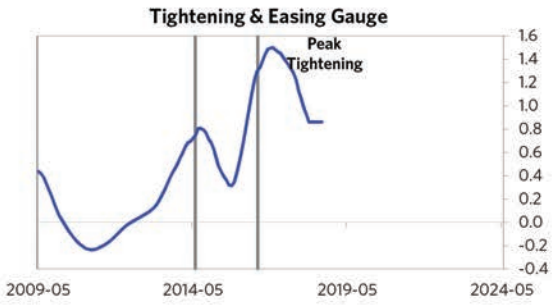
Unlike many other cases, Russia didn't experience a broad-based bubble in the years before the crisis, but it did build up a substantial debt stock driven by unsustainably strong capital inflows, with debts rising by 19% of GDP to a pre-crisis peak of 89% of GDP during a period of leveraging up. In this case, a high share of the debt was in foreign currencies (15% of GDP)—leaving Russia with a large exposure to a pullback in foreign capital. Russia also became somewhat dependent on continuous foreign financing, with investment inflows averaging 6% in the years before the crisis. Ultimately, these high debts and Russia's dependence on foreign financing created an unsustainable situation.

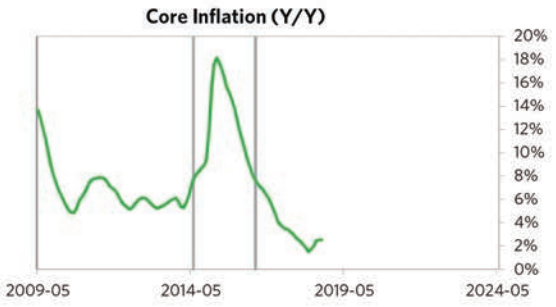
The Depression Phase

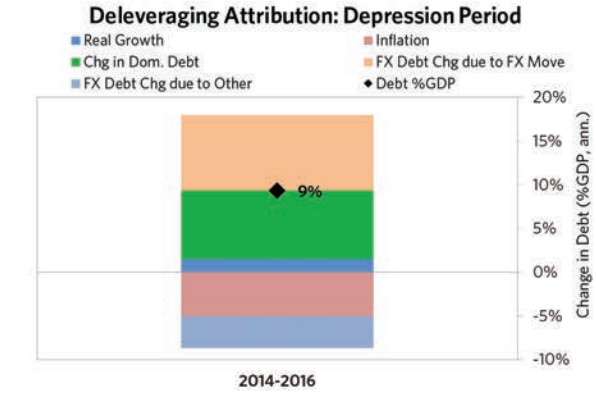
Eventually the cycle turned, producing a self-reinforcing bust and a balance of payments/currency crisis, which ran from 2014 to 2016. At its pre-crisis peak, debt service reached 32% of GDP, making Russia vulnerable to a shock—which came in the form of oil price declines. Russia suffered a fall in foreign funding (with capital inflows falling by 8% of GDP), leading to a tightening (policy makers hiked short rates by 7%) and a meaningful decline in the currency (real FX fell by 30%)—which coincided with self-reinforcing declines in GDP (falling by 4%), and in stock prices (falling by 46%). In addition, currency weakness contributed to moderate inflation, peaking at 18% during the depression phase, which is low compared to other similar cases. That makes sense given that Russia had only about a quarter of the classic "risk factors" for bigger inflation spirals (with the biggest risk factor being a long history of poorly-controlled inflation). Russia's financial institutions also came under considerable pressure. Meanwhile, the central bank spent down its reserves to defend the currency (drawing down reserves by 26%), though it eventually abandoned its currency defense. As shown in the attribution chart to the right, even though Russia needed a deleveraging, its debt as a % GDP went up by 19% (9% annualized), in part because the currency fell (which increased the burden of foreign-denominated debts) and in part because the government had to borrow more in response to the crisis (with a peak fiscal deficit of 4% of GDP).

The gauges below are composed from a compendium of stats shown in the chart deck that follows. Note these are meant to be rough measures.







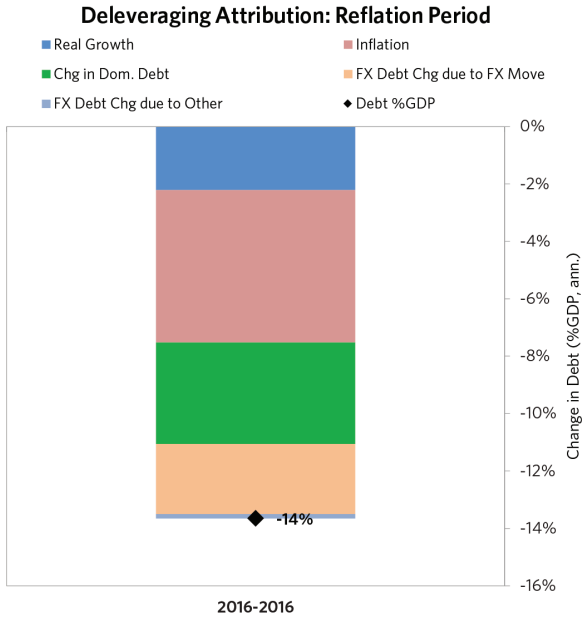


*The first two charts show gauges which measure bubble/depression conditions and tightness/easiness of money and credit. For each gauge, the difference from zero conveys the extent of the bubble while the crossing above/below zero represents the shifting into or out of the bubble.

Russia 2012–2016 Case Auto-Summary (cont.)

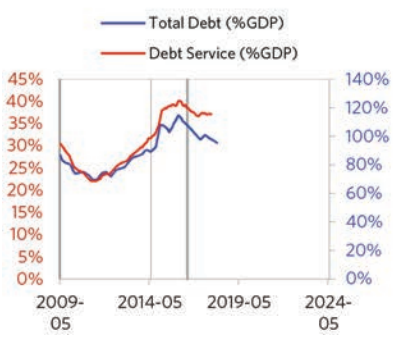
The Reflation Phase

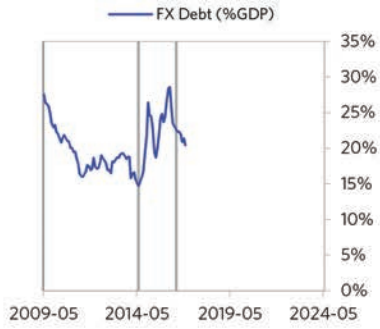
A key determinant of how balance of payments/currency crises play out is how policy makers respond to adverse capital flows: whether they allow a tightening of financial conditions to flow through (painful but typically necessary to resolve the crisis), or print money to make up for money leaving (which can be inflationary). In this case, after a slightly shorter than average "ugly" phase, policy makers allowed enough tightening to flow through to make the currency more attractive to hold. Russia was aggressive in managing its financial institutions and bad debts, pulling 4 out of 9 classic policy levers. As shown in the attribution chart to the right, debt as a % of GDP fell by 7% (14% annualized) over the course of this adjustment period. The reduction in debt-to-income ratios came from a balanced mix of outright debt reduction as well as rising income. Meanwhile, Russia's now much lower currency (with real FX bottoming at -17% during the beautiful period) set up the country for renewed competitiveness. Real GDP has not yet reached its prior peak and equity prices in USD terms haven't yet fully recovered.

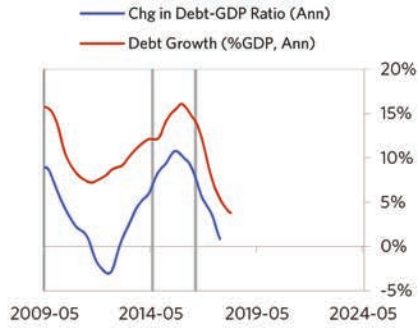


Russia 2012–2016 Chart Deck Appendix

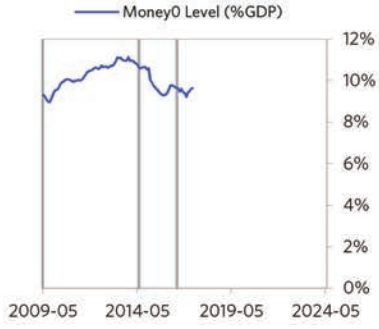
Indebtedness

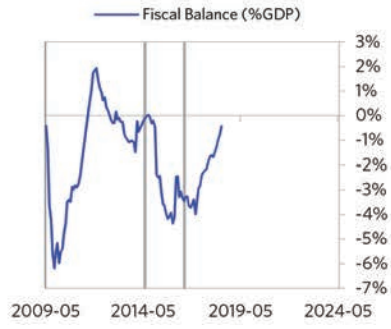




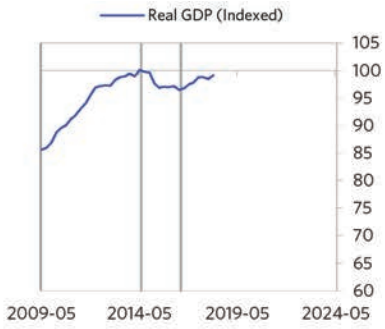


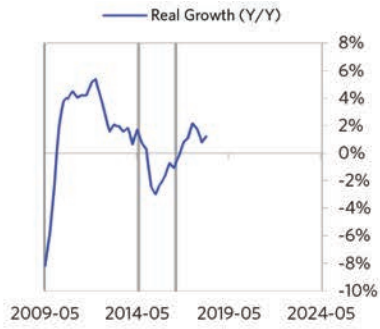
Monetary and Fiscal Policy

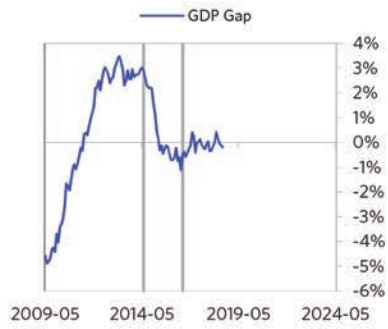


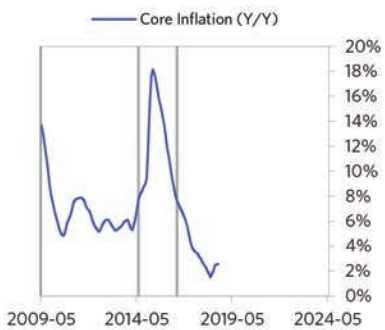


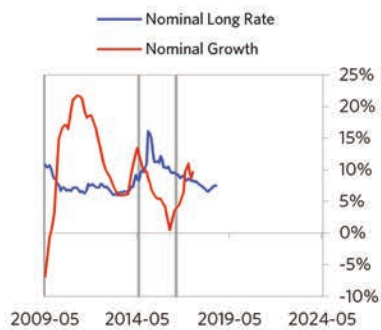
Economic Conditions





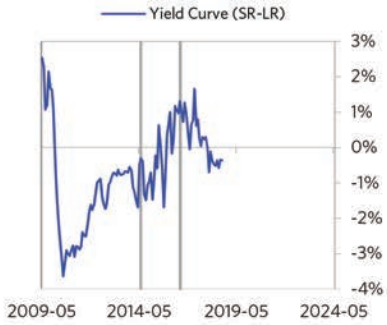


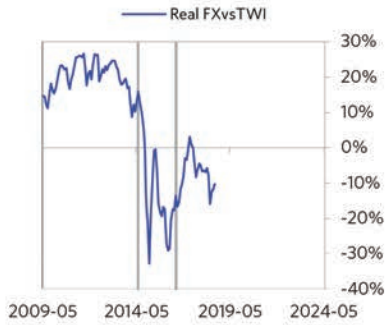


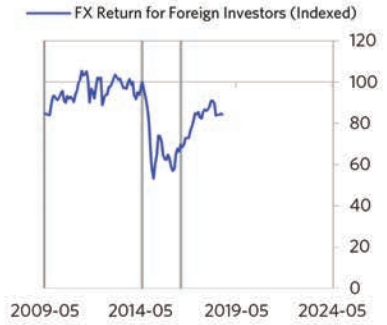


Russia 2012–2016 Chart Deck Appendix (cont.)

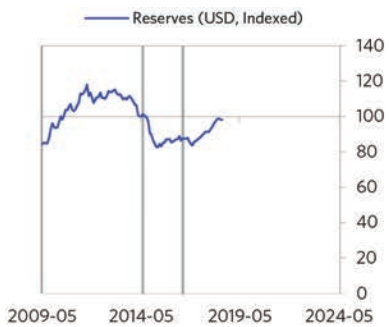
Markets

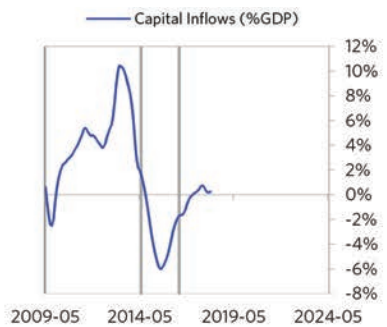


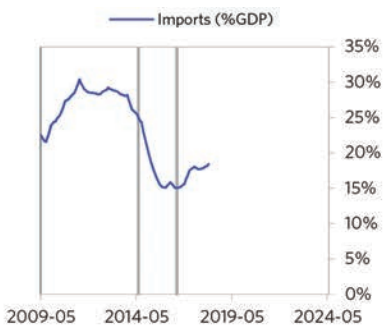


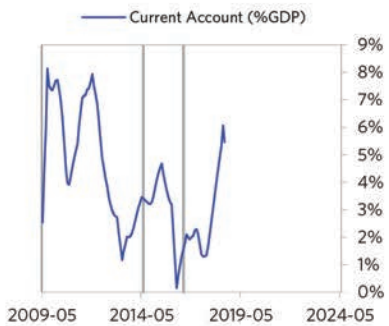


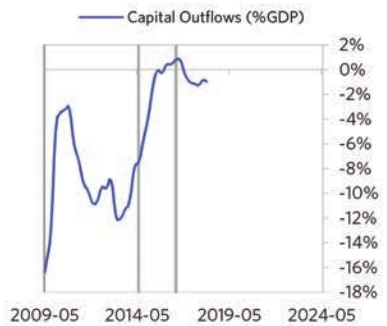
External Position

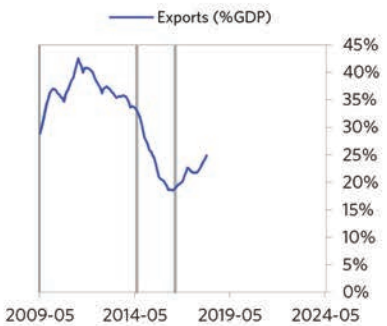












Appendix: Macroprudential Policies

While the central bank is generally meant to provide one monetary policy for all (making money and credit broadly available through banks without deciding who gets it) and those who run fiscal policy are meant to apportion it well, macroprudential policies are tools for directing credit one way or another through the central bank's regulatory authorities. The need for macroprudential monetary policy is created by differentiation as credit grows: There can be a bubble in one area, and a starvation of credit in another area. If policy makers want to slow down credit where bubbles are emerging, and redirect credit to other areas, macroprudential policies can shift credit in that way. For instance, a classic countercyclical macroprudential policy is to make it easier to buy a house in a housing bust (say, by forcing credit standards lower or allowing lower down payments) or to make it harder to buy a house in a housing bubble (by doing the opposite).

By directing credit through regulatory authorities, macroprudential policies can resemble fiscal policies in that they can benefit some at the expense of others. While this is generally avoided, the challenges of managing an economy through a deleveraging make macroprudential policies a really useful tool to complement monetary policy. For instance, QE often fuels pockets of frothiness in the economy, particularly in asset markets, even as the broader economy is still in recovery. In the Great Depression and during World War II, central bankers used macroprudential measures to reduce the pockets of frothiness, while keeping overall monetary policy sufficiently easy for the broader economy.

Macroprudential policies are not a new tool for monetary policy. In fact, they were a bread-and-butter tool of central banks and regulators for almost the entire period of modern monetary policy. As an illustration, the Federal Reserve has changed margin requirements for equity holdings 23 times since it was formed, typically tightening the requirement during big rallies/periods of excess in stock market credit, and easing in bear markets/depressed volumes of credit.[1] While macroprudential measures became rarer from the early 1990s to mid-2000s,[2] that period is the historical exception. Recently, global central banks and regulators have returned to a world where macroprudential tools are thought of as a key part of managing an economy.

The typical case (drawing on the history of macroprudential tools being used in the US)...

Occurred when shifting interest rates was losing effectiveness as a monetary policy tool.

- The economy needs further stimulation, but with interest rates at zero, further easing is limited.
- Tightening in one or more areas is needed when it's not appropriate for the overall economy. Raising interest rates is undesirable because of the drag on growth it would cause.

Occurred when it was desirable to direct credit both to credit-starved sectors, and away from frothy assets/lending.

Involved policy makers using a combination of different types of policies at once.

- These included measures aimed at changing demand for credit:
  - Changing required loan-to-value ratios.
  - Changing required debt service-to-income ratios.
  - Changing requirements around loan maturities.
  - Changing margin requirements for buying financial assets.
  - Changing the cost of loans through interest rate subsidies/tax policy/other regulations.
- And measures aimed at changing the supply of credit:
  - Changing capital/reserve requirements for certain types of lending.

  - Changing the portfolio of assets that financial institutions are allowed to hold.
  - Changing accounting rules on different assets.
  - Supervisors of financial institutions putting pressure for certain lending behaviors.
  - Interest/lending rate ceilings and other limitations.

Saw coordination between the Federal Reserve, Congress, the executive branch, and regulatory bodies.

- During the most successful cases, different parts of the government coordinated their actions. Often, lawmakers and the executive branch armed different government bodies, including the Federal Reserve, with the tools and the leeway to manage policy.
- New institutions were set up to implement the regulations and monitor their progress.

Saw mixed success for different policies—some were more effective, while others had bad second-order consequences. The most successful cases involved significant amounts of experimentation and flexibility.

- In successful cases, effective policies were frequently used for long periods of time, or expanded, and unsuccessful policies were ended, often within a matter of months.
- But policy makers have a mixed track record of quickly ending ones with distortionary second-order consequences. A few were allowed to continue for years (Regulation Q, for instance).
- As the financial system has evolved, policy makers have relied on a changing set of tools as the cost/benefit trade-off of using different tools has evolved.
- When financial innovations made it easier to circumvent certain policies (e.g., new ways for investors to leverage up, new financial institutions springing up), certain policies were adapted or abandoned.

Questions to Consider Pertaining to Macroprudential Policy

As we observe the different cases, we see different issues and questions that policy makers grapple with in implementing macroprudential policy. Below we go through these questions and then give some examples of historical debates.

Where are bubbles emerging in the economy? How confident are you that they are bubbles?

- At different points in history, policy makers have taken various approaches to dealing with bubbles.
  - In a repeat of the late 1920s, US policy was tightening in 1935–36 in part in response to rapid stock price appreciation that caused fears of a bubble. That tightening ended up being too much for the deleveraging economy to bear. The economy went back into severe recession and stocks fell 60 percent between 1937 and 1938.
  - Over the past several decades US monetary policy makers took a "mopping up" approach, with the notion that they should not be involved with pricking bubbles but rather should deal with the implications of a bubble popping on the economy.[3] A key reason was the difficulty in knowing when the market is mispricing an asset. So, for example, despite some concerns in the housing market, regulators didn't aggressively target slowing the increase of frothy mortgage lending in 2006 and earlier.

Which sectors are starved for credit? Is there a need for differentiated credit policy?

- Policy makers in the 1950s grappled with this question by trying to formalize a framework to assess when differentiated policy is necessary.[4] They developed four basic tests:
  - How effective is general monetary policy in balancing the provision of credit to the economy?
  - How potentially destabilizing is the growth of the credit in the specific sector?

- How important is credit to the growth of the specific sector?
- How effective would it be to administer selective credit controls?

How comfortable are you picking winners and losers as part of directing credit? What are the political costs?

What policy tools will you choose to re-direct credit? Will you target demand for credit, or supply of credit, or both?

How will you measure effectiveness of the policy?

What will be the second- and third-order consequences of the policy? How will you handle them? Often, these can come years later.

- Regulation Q, which put caps on interest rates for deposits, was implemented during the Great Depression to give smaller banks a leg up. By the 1950s, it started to create substantial distortions, driving deposits into shadow banking systems.[5]
- Savings & Loan Associates (S&L, a small type of bank) were deregulated in the early 1980s, in part to help those institutions cope with tight monetary policy, contributed to the S&L crisis that began in the mid-1980s.[6]

How will you ensure policy coordination between legislators, the executive branch, and the central bank? How will you empower regulators to make changes?

- The most successful US cases represented broad coordination between different government agencies. The Second World War effort was a good example—Congress revised several laws to give the Federal Reserve the authority it needed, Roosevelt used executive orders to supplement the Fed's efforts, etc.[7]
- In the most successful cases (Volcker's time at the Fed, for instance), policy makers were given the ability to shift policy nimbly as circumstances changed. Some of the biggest issues came from low flexibility—interest rates caps were not flexibly adapted and negative second-order consequences emerged.
- Today, this remains a key question and there are differences in how different governments have vested powers. In the UK for example, much of the power for regulation and macroprudential policy has been vested in the BoE, and the Financial Policy Committee (FPC) within it. In the US, it has been vested in a number of agencies and a coordinating committee setup after the financial crisis, the Financial Stability Oversight Council (FSOC).[8]

Some Historical Cases of US Macroprudential Policies

In the next few pages, we go through historical cases of US macroprudential policies from the last century. It's a long list, so we organized them into seven categories according to the type of policy, and we go through each category chronologically. We relied on the excellent and authoritative paper, "The History of Cyclical Macroprudential Policy in the United States" by Elliott, Feldberg, and Lehnert, for the below framework and historical details.

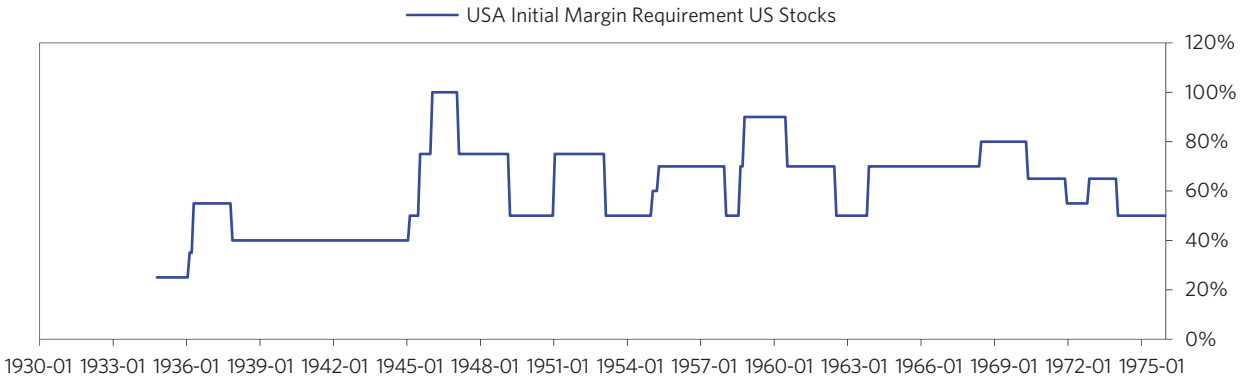
Macroprudential Measures Aimed at Demand for Credit: Margin Requirements

The margin requirement is the amount of collateral—often cash—that investors need to provide in order to buy an investment using credit. Increasing the requirement puts downward pressure on the amount of credit used to purchase financial assets.

After attaining the ability to set margin requirements from the Securities Exchange Act of 1934, the Fed used this ability counter-cyclically.[9] In practice, the Fed would increase the margin requirement when asset prices were booming and the use of credit for asset purchases was rising, and decrease it in the opposite situation.

- Specifically, Regulation T set margin requirements for brokers and Regulation U set the margin requirement for banks.

- All of the Fed's changes to the margin requirements are shown in the chart below.
- Since 1974, the Federal Reserve mostly stopped using this lever, as the development of other ways of buying assets on credit (e.g., derivatives) made it easy for investors to side-step this requirement.



Macroprudential Measures Aimed at Demand for Credit: Underwriting Standards

Great Depression

Congress created the Federal Home Loan Bank System in 1932.[10] It was designed to act as a quasi-central bank for S&Ls, with the ability to provide liquidity through advances or collateralized lending. The FHLB System was also in charge of setting underwriting standards and collateral restrictions.

In 1934, Congress formed the Federal Housing Administration (FHA) to insure home loans.[11] This resulted in easier underwriting standards (80 percent loan-to-value and 20-year maturity) for loans eligible for insurance.

- The Electric Home and Farm Authority, established in 1934, was meant to provide cheap loans for home electric appliances. These loans had <10 percent interest rate and only a 5 percent down payment, for up to 36 months. This program ended in 1942.[12]
- In 1935 Congress lowered the loan-to-value regulations (from 50 percent to 60 percent) and maturity restrictions (from up to 5 years to 10 years) for national banks.[13]
- The FHA insured up to 20 percent of loans (up to 5-year maturity) for improving residential properties from 1934–1937.[14]
- The FHA, in 1938, lowered standards for insurance on home loans. Mortgages with up to 90 percent loan-to-value and 25-year maturity were now eligible.[15]

World War II

- In 1941, President Roosevelt ordered the Federal Reserve Board to limit the use of installment credit to purchase consumer durable goods. Roosevelt wanted to direct production toward national defense rather than domestic consumption. In an executive order, he said: "liberal terms for such credit tend to stimulate demand for consumers' durable goods, the production of which requires the materials, skills, and equipment needed for national defense."[16]
  - The Federal Reserve responded by enforcing tighter underwriting on all types of consumer installment loans (known as Regulation W).[17]

Post-War Period

- In October 1950, the Federal Reserve Board, worried about the rise in mortgage debt, aimed to tighten housing credit. Their response was Regulation X.[18]

  - Regulation X was a set of loan-to-value and maturity caps on residential real estate loans that became more restrictive as loan size grew.
  - The Fed set the target of reducing housing production in 1951 by one-third of the 1950 levels.

- In response to President Truman's requests, in 1950, the Federal Housing Administration (FHA) and Veterans Administration (VA) raised the down payment requirement by 5 percent, decreased the maximum FHA loan on single-family homes from $16,000 down to $14,000, and instituted a maximum maturity of 25 years. These were the FHA's and VA's first restrictive actions in their nearly 20 years of existence.[19]
  - Responding to a recession beginning in mid-1953 and political pressures, these measures were removed.
  - In August 1954, Congress reversed the FHA's and VA's actions—reducing maximum down payment requirements on FHA loans and raised the maximum FHA loan.

- By late-1954, the housing market looked increasingly frothy. However, the Fed did not want to tighten, because the economy was just recovering from a recession. Therefore the government pursued a number of macroprudential policies instead[20] (listed below):
  - First: the FHA and VA raised down payment requirements and reduced maximum maturities on loans, from 30 to 25 years (these were tweaked and eventually reversed in subsequent years)
  - Second: field offices were instructed to "intensify their surveys of local housing markets, and to take coordinated steps to restrain federal underwriting of mortgages in localities where housing surpluses were found to exist."
  - Third: the Federal Home Loan Bank Board (FHLBB) asked Federal Home Loan banks to curb extension of loan commitments to thrifts. In September 1954, they also implemented official restraints on lending by savings and loans banks.
  - Finally, the Federal Reserve Bank of New York moved to restrain mortgage warehouse lending. Mortgage warehouse lending is when commercial banks extend interim loans to finance the origination of mortgages by nonbank lenders. This had more than doubled between August 1954 and August 1955.

- The Credit Control Act, passed in 1969, gave the Federal Reserve the ability to use credit controls to target certain sectors. By targeting certain sectors, the Fed could keep overall monetary policy easy, but tighten sectors experiencing inflation.[21]
  - The Fed's levers included: prescribing a "maximum rate of interest, maximum maturity, minimum periodic payment, maximum period between payments, and other specification or limitation of the terms and conditions of any extension of credit."
  - The Credit Control Act was not used until the Volcker era.

- In 1982, Congress abolished restrictions on loan-to-value ratios and maturities for national banks.[22]

Macroprudential Measures Aimed at Supply of Credit: Voluntary Guidelines Aimed at Reducing Speculative/Non-Productive Lending

In the following examples, policy makers imposed voluntary restraints or guidelines on the banks, in order to curb lending for speculative or non-productive ends.

- Congress, in 1947, encouraged banks to "restrict voluntarily their lending and investing programs."[23] This guideline was put in place after the Fed's limits on consumer installment loans expired.

- During the Korean War, Congress enacted the Defense Production Act of 1950. This gave the Federal Reserve the authority to establish "voluntary" credit restraints.[24]
  - The Federal Reserve asked lenders to "screen loan applications on the basis of their [loan's] purpose, in addition to the usual tests of credit worthiness." The program was in place for about a year.
- In 1965, the cabinet-level Committee on the Balance of Payments recommended "voluntary" lending restraints, to be monitored by the Federal Reserve.[25]
  - This policy sought to reduce net capital outflows by over 15 percent from the previous year.
  - The program called for an initial 5 percent ceiling on foreign loan growth, the first time such a quantitative credit target was put in place.
  - In 1968, President Johnson passed an Executive Order which allowed the Federal Reserve to make the program mandatory. However, the Fed chose not to, citing the high voluntary participation. The programs continued until 1974.
- In 1966, the Fed prompted banks to slow business loans. At the time, business credit creation was high and inflation was rising. For banks that did not cooperate, the Fed limited their ability to borrow at the discount window. After the economy slowed, the policy was ended.[26]
- From March to July 1980, President Carter established the "voluntary" Special Credit Restraint Program. Under the program, banks, bank holding companies, finance companies, and foreign bank branches were asked to limit loan growth to 6-9%.[27]
  - From a high level, the program was designed to restrain certain types of speculative or inflationary lending, while maintaining availability of funds to small businesses, farmers, and home buyers. Banks were encouraged to "maintain availability of funds to small business, farmers, home buyers and others without access to other forms of financing" and ensure that "credit for automobiles, home mortgage and home improvement loans should be treated normally in the light of general market conditions."
  - Conversely, banks were encouraged to restrain credit card lending and to limit other unsecured consumer loans. The program also asked banks to limit credit used to support "essentially speculative uses of funds, including voluntary buildup of inventories by businesses beyond operating needs, or to finance transactions such as takeovers or mergers that can be reasonably postponed, that do not contribute to economic efficiency or productivity, or may be financed from other sources of funds." Speculative lending also covered "financing of purely speculative holdings of commodities or precious metals."
  - The Special Credit Restraint Program called for periodic reports on lending activities.
- Similar tools were used in Europe. National credit councils in France and Italy would announce which sectors they thought needed more credit or were already over-burdened, especially in the post-war period.[28]

Macroprudential Measures Aimed at Supply of Credit: Reserve Requirements

- State governments instituted the first reserve requirements in the 1800s, to ensure that state-chartered banks had enough reserves (typically gold or other specie) to meet their obligations (in the form of circulating bank notes) and to meet deposit withdrawals. The National Bank Act, passed in 1863, introduced the first nationwide reserve requirements for banks.[29]
- Congress eased reserve requirements in the Federal Reserve Act of 1913.[30] This is because, with the Federal Reserve now serving as a lender of last resort for national banks, Congress viewed reserve requirements as less critical.
- In the 1930s and afterwards, reserve requirements were again seen as a more useful counter-cyclical policy tool. In 1935, Congress gave the Federal Reserve the ability to set the reserve requirement.[31] In conjunction with Roosevelt's economic recovery program in the spring of 1938, the central bank lowered

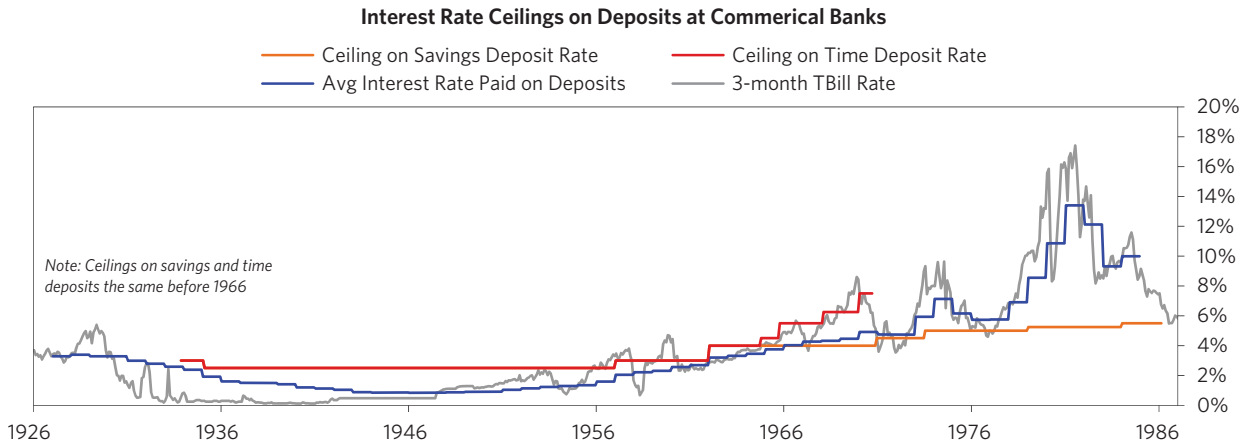
reserve requirements. In the 1940s, the Federal Reserve made a series of adjustments to the reserve requirements: in 1942, reserve requirements were eased three times. During the war, the Federal Reserve held requirements steady, and following the war (in 1948) the requirements were tightened three times—back to the statutory caps. Between 1949 and 1951, the reserve requirements were adjusted nine times; the Federal Reserve eased them in 1949 and tightened them in 1951.

- During periods of tightening interest rates, the Federal Reserve also raised the reserve requirements in 1966–69, 1973, and 1979–80.[32]
- Eventually, new funding instruments were invented to continue lending and bypass the reserve requirement. These included commercial paper, eurodollars, repurchase agreements, and large-denomination certificates of deposits.[33]
- In 1969, the Federal Reserve attempted to address the loopholes that were enabling banks to skirt the reserve requirements. New bank borrowing from overseas branches was capped at 10%; this was done to stop banks from borrowing eurodollars through their overseas branches (which were not subject to reserve requirements). Additionally, the Fed set a 10 percent limit on assets sales by banks to their overseas branches.[34]
  - In 1970, the limits on both borrowing from and selling assets to overseas branches were increased to 20 percent. However, in 1973, these requirements were both lowered down to 8 percent. This was the same requirement as was in place for large-denomination certificates of deposits.[35]
- In the late 1960s, the Federal Home Loan Bank Board (FHLBB) used reserve requirements to affect mortgage lending. The FHLBB reduced requirements when savings declined, thereby increasing liquidity in mortgage lending, and raised requirements when lending was high, or liquidity already abundant.[36]
- As part of Paul Volcker's effort to rein in inflation, the Federal Reserve increased interest rates and reserve requirements in October 1979. Reserve requirements on wholesale liabilities rose to 8 percent (wholesale liabilities included large time deposits, eurodollar borrowings, repos with government or agency collateral backing, and federal funds borrowings).[37]
  - In March 1980, the reserve requirements were increased to 10%. One month later, the central bank lowered the requirements to 5 percent and eventually eliminated them entirely in July.
- The FHLBB eased the reserve requirements in 1968–69 and 1973–74, when liquidity for mortgage lending was squeezed. It had "at most a limited, positive impact on mortgage lending."[38]
- In 1980, the Fed imposed unprecedented asset-based reserve requirements to reduce inflation. This fell under their control due to the 1969 Credit Control Act.[39] The exact requirements were as follows:
  - All lenders were required to hold a special deposit of 15 percent on specific types of consumer credit. Money-market funds were subject to the same reserve requirements. Both were later lowered to 7.5 percent.
  - Money-market funds were also required to file monthly reports.
  - By August, the Fed removed all of the restrictions completely, and by the end of 1980, Congress terminated the Credit Control Act.
- The Federal Reserve lowered reserve requirements in 1990 and 1992 to promote credit availability.[40]
- To briefly provide some perspective from Europe, liquidity ratios and reserve requirements there have also been used as macroprudential tools. France and Italy would particularly use different reserve requirements to help direct credit—for instance, giving public banks more lenient requirements, or excluding long-term or export loans.[41]
- Regulators more often used some types of caps on the amount of loans, or the ability of banks to access central bank financing for lending—tools which had similar net effects of putting downward pressure on the supply of credit. For instance, until 1972 France had a "rediscount ceiling," a cap that limited how much a financial institution could borrow from the central bank.[42]

- The cap often differed by sector or by type of loan, designed to encourage or discourage certain types of lending. For instance, overproduction in certain agricultural products led the Banque de France to set lending quotas in those sectors.[43] Sometimes, these caps were broader, targeting all lending to corporations or households.[44]

Macroprudential Measures Aimed at Supply of Credit: Interest Rate Ceilings

- In the early 1900s, states limited the interest rates a bank could offer for deposit accounts. This was part of state deposit insurance programs.[45]
- Under the amended Federal Reserve Act of 1927, a cap was placed on interest paid by national banks to state banks.[46]
- After the passage of the Banking Act of 1933, the Federal Reserve was able to regulate maximum interest rates paid on time and savings deposits.[47]
  - In November 1933, the Fed imposed Regulation Q: a 3 percent ceiling on interest rates. After a decline in market rates, the Fed lowered this to 2.5 percent, reducing the costs for the banks.
  - Regulation Q also allowed the Fed to set maximum rates the Federal Deposit Insurance Corporation (FDIC) paid to non-member insured banks.
  - The Fed did not want to limit bank balance sheets, so it later raised the maximum rate back to 3 percent (for all savings and time deposits with maturities of six months or more). This allowed banks to attract more depositors with a higher interest rate.
  - As market rates rose again in 1960 and 1961, the Federal Reserve raised Regulation Q ceilings.
- From 1934 to 1989, the Federal Home Loan Bank Board (FHLBB) was responsible for supervising savings and loans. The FHLBB set informal ceilings on dividends paid by savings and loans, which were generally about 25-50 basis points above the Fed funds rate.[48]
- Under the Interest Rate Regulation Act of 1966 the FDIC and FHLBB were able to set interest rate ceilings on deposits at mutual savings banks and savings and loans. This act also allowed the Federal Reserve to set rates for specific classes of deposits.[49]
  - The Fed used this authority to set a 5.5 percent limit on single-maturity CDs. It also lowered the maximum interest rates paid on time deposits.
  - However, in 1973, this ceiling on CDs was removed.
- In 1978, the Fed allowed banks to issue money-market certificates with floating interest rate ceilings pegged to the six-month Treasury bill. The banks were now able to issue instruments competitive with money-market funds. This was a relaxation of previous Regulation Q ceilings.[50]
- The Depository Institutions Deregulation and Monetary Control Act in March, 1980, eliminated Regulation Q. In the end, Regulation Q was considered unsuccessful because there were many ways to get around it.[51]
- By 1986, the ceilings were gradually phased out.[52]



Macroprudential Measures Aimed at Supply of Credit: Supervisory Guidance and "Direct Pressure"

Guidance to curtail lending in booms

- After World War I, the Federal Reserve wanted to direct credit toward what it deemed as productive rather than speculative uses. It used supervisors to exert "direct pressure" on the banks.[53]
- By the middle of 1927, policy makers were nervous about stock market speculation. In the previous year, stocks rose by almost 100 percent, and credit creation was booming. The central bank, in February of 1929, issued a statement to denounce speculation; the Fed stated it would not lend to banks that were extending credit for speculation. The Fed's statement was largely ineffectual at stemming speculation.[54]
- On November 24th, 1947, supervisors of lending standards issued a statement urging for bank caution. They were concerned that there were both excessive credit creation in the economy and falling credit standards. The statement said that banks "should curtail all loans either to individuals or business for speculation in real estate, commodities or securities."[55]
- Supervisors again released several statements detailing a deterioration in lending standards in the 1990s and 2000s.[56]
  - Specifically, in 1995 the Fed warned that examiners should watch for excessive easing in credit underwriting standards. The Fed was also concerned about the risks of a cyclical downturn in regional real estate markets. This was due to previous experiences with the S&L crisis in the 1980s.
  - In 1999, supervisors issued a statement that detailed the risks of subprime lending. They also suggested raising the capital standards for those institutions engaged in the practice. This came after several banks failed the year before, due to subprime lending losses.
  - Two years later, the agencies quantified the new capital standards. The statement suggested that banks hold between 1.5x–3x more capital against subprime loans, versus assets of a similar type.
  - In the early and mid-2000s, Federal officials made several statements that expressed concern over frothy credit growth.
  - Supervisors took further action in 2005, issuing guidance on home equity and commercial real estate lending as well as on nontraditional mortgages.
  - In 2013, the Fed and OCC tightened regulation of leveraged loans, adopting a 6x leverage limit, threatening fines.

Credit availability during busts

- In order to promote credit creation, President Roosevelt asked regulators in April, 1938 to "agree on a more liberal bank examination policy."[57]

- The Treasury, along with three federal supervisors, responded by issuing a joint statement that outlined the unified treatment of loans and securities. The procedures described a move away from mark-to-market accounting for securities. They also distinguished "investment" and "speculative" securities. Investment securities were assigned one of the four highest grades from the rating agencies.
- As the S&L crisis of the 1980s came to an end, the administration moved to ease the credit crunch.[58]
  - First: in May of 1990, the OCC, Fed, and FDIC leaders urged senior bank officials to extend loans to borrowers.
  - Supervisors published a report to "clarify regulatory policies" in March 1991. The supervisors did not ease supervisory standards, despite stating that "It is possible, however, that some depository institutions may have become overly cautious in their lending practices."
- Shortly after his election, President Clinton pursued a new credit availability initiative. The supervisors issued a concurrent joint statement, meant to encourage banks to lend.[59]
- Clinton's initiatives attempted to make small business lending easier by reducing the "appraisal burden" and enhancing the appeals by bankers of examiners' decisions.
- Supervisors, from 2007–2009, encouraged banks to lend and to work with distressed borrowers, without weakening the standards of examination.[60]

1 Douglas J. Elliott, Greg Feldberg, and Andreas Lehnert, "The History of Cyclical Macroprudential Policy in the United States," *Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System (U.S.)* 2013-29 (May 2013): 19.
2 Elliott, Feldberg, and Lehnert, 3.
3 Fischer, Stanley, "Financial Sector Reform: How Far Are We?" *At the Martin Feldstein Lecture, National Bureau of Economic Research, Board of Governors of the Federal Reserve System (U.S.)* Speech 813 (July 2014).
4 Elliott, Feldberg, and Lehnert, 13.
5 Elliott, Feldberg, and Lehnert, 30-31.
6 Elliott, Feldberg, and Lehnert, 34.
7 Elliott, Feldberg, and Lehnert, 10.
8 Wilson, Dominic, Kamakshya Trivedi, Noah Weisberger, Aleksandar Timcenko, Jose Ursua, George Cole, Hui Shan, and Julian Richers, "Beyond interest rates: Macro-prudential policies in housing markets," *Global Economics Weekly, Goldman Sachs*, no. 14/16 (April 2014).
9 Elliott, Feldberg, and Lehnert, 19.
10 Elliott, Feldberg, and Lehnert, 9-10.
11 Elliott, Feldberg, and Lehnert, 10.
12 Elliott, Feldberg, and Lehnert, 10.
13 Elliott, Feldberg, and Lehnert, 9.
14 Elliott, Feldberg, and Lehnert, 9.
15 Elliott, Feldberg, and Lehnert, 9.
16 Elliott, Feldberg, and Lehnert, 10.
17 Elliott, Feldberg, and Lehnert, 11.
18 Elliott, Feldberg, and Lehnert, 13.
19 Elliott, Feldberg, and Lehnert, 13.
20 Elliott, Feldberg, and Lehnert, 14-15.
21 Elliott, Feldberg, and Lehnert, 15-16.
22 Elliott, Feldberg, and Lehnert, 17.
23 Elliott, Feldberg, and Lehnert, 21.
24 Elliott, Feldberg, and Lehnert, 21.
25 Elliott, Feldberg, and Lehnert, 22.
26 Elliott, Feldberg, and Lehnert, 23.
27 Elliott, Feldberg, and Lehnert, 23.
28 Kelber, Anna and Éric Monnet, "Macroprudential policy and quantitative instruments: a European historical perspective," *Financial Stability Review, Banque de France*, no. 18 (April 2014): 157.
29 Elliott, Feldberg, and Lehnert, 24.
30 Elliott, Feldberg, and Lehnert, 25.
31 Elliott, Feldberg, and Lehnert, 25.
32 Elliott, Feldberg, and Lehnert, 26-27.
33 Elliott, Feldberg, and Lehnert, 26.
34 Elliott, Feldberg, and Lehnert, 27.
35 Elliott, Feldberg, and Lehnert, 27.
36 Elliott, Feldberg, and Lehnert, 28.
37 Elliott, Feldberg, and Lehnert, 27.
38 Elliott, Feldberg, and Lehnert, 28.
39 Elliott, Feldberg, and Lehnert, 29.
40 Elliott, Feldberg, and Lehnert, 24.
41 Kelber and Monnet, 158.
42 Kelber and Monnet, 155.
43 Kelber and Monnet, 156.
44 Kelber and Monnet, 156.
45 Elliott, Feldberg, and Lehnert, 30.
46 Elliott, Feldberg, and Lehnert, 30.
47 Elliott, Feldberg, and Lehnert, 30.
48 Elliott, Feldberg, and Lehnert, 32.
49 Elliott, Feldberg, and Lehnert, 32.
50 Elliott, Feldberg, and Lehnert, 33.
51 Elliott, Feldberg, and Lehnert, 34.
52 Elliott, Feldberg, and Lehnert, 34.
53 Elliott, Feldberg, and Lehnert, 36.
54 Elliott, Feldberg, and Lehnert, 36.
55 Elliott, Feldberg, and Lehnert, 37.
56 Elliott, Feldberg, and Lehnert, 37-38.
57 Elliott, Feldberg, and Lehnert, 38.
58 Elliott, Feldberg, and Lehnert, 39.
59 Elliott, Feldberg, and Lehnert, 39.
60 Elliott, Feldberg, and Lehnert, 40.

Disclosures

Bridgewater research utilizes data and information from public, private and internal sources, including data from actual Bridgewater trades. Sources include, the Australian Bureau of Statistics, Asset International, Inc., Barclays Capital Inc., Bloomberg Finance L.P., CBRE, Inc., CEIC Data Company Ltd., Consensus Economics Inc., Corelogic, Inc., CoStar Realty Information, Inc., CreditSights, Inc., Credit Market Analysis Ltd., Dealogic LLC, DTCC Data Repository (U.S.), LLC, Ecoanalitica, EPFR Global, Eurasia Group Ltd., European Money Markets Institute – EMMI, Factset Research Systems, Inc., The Financial Times Limited, GaveKal Research Ltd., Global Financial Data, Inc., Guidepoint Global, LLC, Harvard Business Review, Haver Analytics, Inc., The Investment Funds Institute of Canada, Intercontinental Exchange (ICE), Investment Company Institute, International Energy Agency, Lombard Street Research, Markit Economics Limited, Mergent, Inc., Metals Focus Ltd, Moody's Analytics, Inc., MSCI, Inc., National Bureau of Economic Research, Organisation for Economic Cooperation and Development, Pensions & Investments Research Center, RealtyTrac, Inc., RP Data Ltd, Rystad Energy, Inc., S&P Global Market Intelligence Inc., Sentix Gmbh, Shanghai Wind Information Co., Ltd., Spears & Associates, Inc., State Street Bank and Trust Company, Sun Hung Kai Financial (UK) Limited, Thomson Reuters, Tokyo Stock Exchange, United Nations, US Department of Commerce, Wood Mackenzie Limited, World Bureau of Metal Statistics, and World Economic Forum. While we consider information from external sources to be reliable, we do not assume responsibility for its accuracy.

The views expressed herein are solely those of Bridgewater and are subject to change without notice. This material is for informational and educational purposes only and is not an offer to sell or the solicitation of an offer to buy the securities or other instruments mentioned. Any such offering will be made pursuant to a definitive offering memorandum. This material does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual investors which are necessary considerations before making any investment decision. Investors should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, where appropriate, seek professional advice, including legal, tax, accounting, investment or other advice. The information provided herein is not intended to provide a sufficient basis on which to make an investment decision.

This information is not directed at or intended for distribution to or use by any person or entity located in any jurisdiction where such distribution, publication, availability or use would be contrary to applicable law or regulation or which would subject Bridgewater to any registration or licensing requirements within such jurisdiction.