Macroeconomics | Activity 9, Lecture 10

Government Debt: the Snowball and the Currency

Worked solutions

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Lesson of the day. A debt is sustainable when the economy can grow out of it. When the interest rate is below the growth rate ($r < g$), the debt ratio drifts down on its own; when $r > g$ it snowballs and needs a primary surplus to stabilise. And a country that borrows in its own currency cannot be forced into outright default; its real limits are inflation and its own politics.

Phase 1 – Concept checks

ANSWERS

ConcepTest 1. **Answer.** (b). The deficit is a flow, this year's borrowing; the debt is a stock, the accumulated total. Each year's deficit adds to the stock, as water flowing in raises the level in a tank.

ConcepTest 2. **Answer.** (b), fall. $\Delta b = (r - g)b - s = (0.03 - 0.05)(1) - 0 = -0.02$: the ratio falls by 2 points. When $g > r$, growth shrinks the debt burden even with a balanced primary budget.

ConcepTest 3. **Answer.** (b). An own-currency borrower can always create the money to repay, so it cannot be forced into outright default. A country that borrows in a currency it does not control, such as a member of a shared-currency union, can be. This is why Japan carries very high debt while Greece was forced into default and austerity at a lower ratio.

ConcepTest 4. **Answer.** (b). When the multiplier is large, especially at the zero lower bound, austerity can cut output so much that the ratio of debt to GDP goes up rather than down.

Phase 2 – The desk problem

FULL WORKING

(a) Good times (worked for you). $\Delta b = (0.03 - 0.05)(1) - 0 = -0.02$: the debt ratio falls by 2 points a year, with no primary surplus at all. Growth outruns the interest bill.

(b) A crisis. With $r = 6$ per cent and $g = 2$ per cent:

$$\Delta b = (0.06 - 0.02)(1) - 0 = +0.04,$$

so the debt ratio is now *rising* by 4 points a year. The snowball has turned against the country: interest is outrunning growth.

(c) Stabilising the debt. To hold the ratio steady ($\Delta b = 0$) the country needs

$$s^* = (r - g)\, b = (0.06 - 0.02)(1) = 0.04,$$

a primary surplus of **4 per cent of GDP**, year after year. That is a large and painful surplus, the kind that means deep spending cuts or tax rises.

(d) Level or gap? Both cases start from the same debt, 100 per cent of GDP, yet one is comfortable and the other a crisis. What differs is the sign and size of $(r - g)$. When g exceeds

r, the economy grows faster than the interest bill, so the debt ratio drifts down on its own and even a modest deficit is fine. When r exceeds g, interest outruns growth, the ratio climbs by itself, and only a primary surplus can hold it. The interest-growth gap, not the headline debt number, decides sustainability.

One debt level, two fates. With g above r the debt melted at 2 points a year; with r above g it snowballed at 4, and stabilising it demanded a 4-per-cent surplus. The gap between r and g, not the level of debt, is what matters.

Phase 3 – The case

WORKED ANSWERS

The government is that of the United States, and the episode is the 2011 debt-ceiling standoff and the first downgrade of US sovereign debt.

1. No. Because it borrows in dollars, which its own central bank can always create, the United States cannot be forced into outright default the way a shared-currency country can. The only way it misses a payment is by choosing not to raise its self-imposed debt ceiling, which is a political risk, not a question of solvency. The 2011 danger was manufactured in the legislature, not imposed by the markets.

2. Since the debt will be repaid in a currency the government itself issues, investors do not really doubt that they will be paid. A downgrade based on political dysfunction need not reduce their willingness to hold the debt, especially when, in a moment of global anxiety, this government's bonds are still the asset investors run to for safety.

3. It fell. In the days after the downgrade, investors bought *more* of the government's debt, not less, and its interest rate went down rather than up. Frightened by the wider uncertainty, they moved into these bonds as the safe haven, which showed that markets never doubted the country could pay. The downgrade was about politics; the price said solvency was not in question.

4. A country that borrows in its own currency faces a different kind of limit from one that does not. It cannot be forced to default, so a shared-currency country like Greece can be pushed into crisis at a debt level an own-currency country would carry comfortably. The real limits for the own-currency government are inflation, if it prints too much, and its own politics, not the threat of insolvency. That is why the same debt ratio can be a crisis in one country and a non-event in another.

The government was downgraded and its borrowing cost fell. It borrows in a currency it prints, so it cannot be forced to default; the only true risks are inflation and its own politics. Who controls the currency the debt is written in changes everything.

End of solutions. Sources: Jones, *Macroeconomics* 6e, Ch. 18; the August 2011 downgrade of United States sovereign debt. All figures verified.