Can the cure kill the patient?
Corporate credit interventions and debt overhang
Nicolas Crouzet and Fabrice Tourre

discussion by Toni Whited

2020 Macro Finance Society

Outline

Do credit support programs help firms?

▶ Incredibly important question!

▶ The answer is ... well, it depends

▶ If government credit carries the same rate as private credit, there is an MM-like result.

▶ If government credit is cheaper than private credit, they are long-run detrimental
  ▶ Too much uptake leads to debt overhang

▶ Can be helpful if other financial markets freeze at the same time

I want to talk about three things

▶ Review the intuition

▶ Do the quantitative results make sense?

▶ Is this the right model?

Outline

1 Summary

2 Intuition

3 Quantities

4 Tweaks

5 Conclusion

The analytical framework for this question is standard

▶ Infinite-horizon, partial equilibrium model of a firm (some welfare at the end)

▶ The firm makes simultaneous decisions about
  ▶ investment (with adjustment costs)
  ▶ long-term, tax-benefited, unsecured debt
  ▶ default

▶ Nice setting for analyzing policies to alleviate negative shocks.

A constant-returns economy with investment adjustment costs and long-term debt

▶ We already have some nice intuition from Hennessy (2004):

  ▶ Investment is determined solely by marginal q

  ▶ Marginal q equals **observable** average q minus a debt overhang correction

  ▶ Overhang lowers marginal q by truncating equity's horizon at default

▶ A better model than a decreasing returns model

  ▶ Average investment deviates little from the depreciation rate

Costs and benefits of financing with debt

- ▶ Debt is long term

- ▶ There is a standard tax benefit of debt

- ▶ Issuing equity is costless

- ▶ The firm can finance old debt with new debt

- ▶ Debt is unsecured, and default occurs if debt gets so high that equity value falls to zero
    - ▶ All capital goes up in smoke in default

- ▶ Firms use a great deal of leverage because they can pay off even high levels of debt with costless equity issuance.

Intuition behind the policy interventions

▶ What is the policy experiment:
  ▶ Uncertainty in the model is *i.i.d.* shocks to capital — not TFP
  ▶ A shock is a one-time parametric drop in TFP that recovers linearly with perfect foresight.

▶ If government credit is priced correctly, firms' optimal decisions are unchanged

▶ If credit is cheap, firms use too much and overhang depresses long-run investment

▶ If there is a simultaneous credit freeze, then interventions help.
  ▶ Companies avoid default by refinancing, so a credit freeze is very bad.

Outline

1 Summary

2 Intuition

3 Quantities

4 Tweaks

5 Conclusion

I did not understand the choices in the calibration

▶ The authors calibrate leverage to Compustat debt/EBITDA.

▶ One problem here is that EBITDA is negative for 25% of Compustat firms
  ▶ Negative EBITDA firms are approximately 50 times smaller
  ▶ Very low leverage

▶ The authors must be using gross debt in their debt/EBITDA calculations
  ▶ But the model does not have cash, so they should use net debt
  ▶ What really matters for firm behavior is net debt

▶ Compared to net debt/assets, model leverage is way too high

If the calibration matched net debt/assets then . . .

▶ The MM results would not change

▶ The subsidized credit result would not change qualitatively

    ▶ It might get magnified!

    ▶ Adding a small subsidy to an almost linear storage technology $\longrightarrow$ large increase in debt

    ▶ The change in debt overhang might be large

▶ Credit freeze results would be less dramatic because of fewer initial defaults.

Outline

1 Summary

2 Intuition

3 Quantities

4 Tweaks

5 Conclusion

It must be really hard to get this model to match leverage

▶ Authors note that one big difference with the Hennessy and Whited (2007) setup is no equity issuance costs

▶ What does this mean for firm behavior?

▶ In the authors' model, it is optimal to get really close to the default threshold

▶ It is always possible to repay debt by floating equity

The model fails to match several important features of the data

▶ Leverage

▶ Equity issuance DeAngelo, DeAngelo, and Stulz (2010)

    ▶ In the data, equity issuance (unrelated to option exercise) is rare

    ▶ Issuance occurs more often in low-leverage, high-value firms

    ▶ In this model, it occurs in high-leverage, low-value firms

Fortunately these issues are easy to fix

▶ Add an equity issuance cost

▶ Adds a precautionary motive to the model

▶ The firm stays away from the default boundary to avoid having to issue costly equity

▶ Small issuance costs dampen issuance a great deal

Lower baseline debt would imply quantitatively large differences!

The credit programs did not happen in isolation

▶ The federal funds rate went to near zero

▶ The Fed pumped an enormous amount of liquidity into the markets

▶ Both inflated market equity prices

▶ Interesting to look at a joint experiment

Outline

1 Summary

2 Intuition

3 Quantities

4 Tweaks

5 Conclusion

A paper with enormous potential

▶ Interesting topic with important policy implications

▶ Good policy answers require realistic quantitative predictions

▶ Get the quantities right

▶ Maybe a slightly different model would be the right way to go

DeAngelo, H., L. DeAngelo, and R. M. Stulz. 2010. Seasoned equity offerings, market timing, and the corporate lifecycle. *Journal of Financial Economics* 95:275–295.

Hennessy, C. A. 2004. Tobin's Q, Debt overhang, and Investment. *Journal of Finance* 59:1717–1742.

Hennessy, C. A., and T. M. Whited. 2007. How costly is external financing? Evidence from a structural estimation. *Journal of Finance* 62:1705–1745.