The Tail that Wags the Economy: Belief-Driven Business Cycles and Persistent Stagnation

Kozlowski, Veldkamp & Venkateswaran

Discusion by Franck Portier

"Secular Stagnation, Growth and Real Interest Rates"
June 18, 2015, Firenze

Toulouse School of Economics

Roadmap

1.

2.

Roadmap

1.
2. 

Roadmap

1. A Model

A Model

Environment

- Small economy with integrated capital market
- Risk neutral international investors
- Hand-to-Mouth domestic consumer-workers
- Aggregate shocks to capital quality
- Modigliani-Miller holds

A Model

Environment

- Small economy with integrated capital market
- Risk neutral international investors
- Hand-to-Mouth domestic consumer-workers
- Aggregate shocks to capital quality
- Modigliani-Miller holds

A Model

Environment

- Small economy with integrated capital market
- Risk neutral international investors
- Hand-to-Mouth domestic consumer-workers
- Aggregate shocks to capital quality
- Modigliani-Miller holds

A Model

Environment

- Small economy with integrated capital market
- Risk neutral international investors
- Hand-to-Mouth domestic consumer-workers
- Aggregate shocks to capital quality
- Modigliani-Miller holds

A Model

Environment

- Small economy with integrated capital market
- Risk neutral international investors
- Hand-to-Mouth domestic consumer-workers
- Aggregate shocks to capital quality
- Modigliani-Miller holds

A Model

Dynamics

- The dynamics will be driven by
  - × The dynamics of shocks
  - × The dynamics of learning/believes

A Model

Dynamics

- The dynamics will be driven by
  - × The dynamics of shocks
  - × The dynamics of learning/believes

A Model

Dynamics

- The dynamics will be driven by
  - The dynamics of shocks
  - The dynamics of learning/believes

A Model

Foreign investors

- Risk-neutral
- Require a expected return $r^\star$
- Supply as much capital K as demanded for a return $r^\star$

A Model

Foreign investors

- Risk-neutral
- Require a expected return $r^\star$
- Supply as much capital K as demanded for a return $r^\star$

A Model

Foreign investors

- Risk-neutral
- Require a expected return $r^\star$
- Supply as much capital K as demanded for a return $r^\star$

A Model

Households

- Preferences
$$U_t = \log C_t - \frac{B}{1+\gamma} L_t^{1+\gamma}$$
- Budget constraint
$$C_t = w_t L_t + E$$
- Note: Final consumption good is the numéraire
- E is period exogenous endowment of consumption good
- Labor supply:
$$L_t = \frac{1}{B} - \frac{E}{w_t}$$

A Model

Households

- Preferences

$$U_t = \log C_t - \frac{B}{1+\gamma} L_t^{1+\gamma}$$

- Budget constraint

$$C_t = w_t L_t + E$$

- Note: Final consumption good is the numéraire
- E is period exogenous endowment of consumption good
- Labor supply:

$$L_t = \frac{1}{B} - \frac{E}{w_t}$$

A Model

Households

- Preferences

$$U_t = \log C_t - \frac{B}{1+\gamma} L_t^{1+\gamma}$$

- Budget constraint

$$C_t = w_t L_t + E$$

- Note: Final consumption good is the numéraire
- E is period exogenous endowment of consumption good
- Labor supply:

$$L_t = \frac{1}{B} - \frac{E}{w_t}$$

A Model

Households

- Preferences

$$U_t = \log C_t - \frac{B}{1+\gamma} L_t^{1+\gamma}$$

- Budget constraint

$$C_t = w_t L_t + E$$

- Note: Final consumption good is the numéraire
- E is period exogenous endowment of consumption good
- Labor supply:

$$L_t = \frac{1}{B} - \frac{E}{w_t}$$

A Model

Households

- Preferences
$$U_t = \log C_t - \frac{B}{1+\gamma} L_t^{1+\gamma}$$
- Budget constraint
$$C_t = w_t L_t + E$$
- Note: Final consumption good is the numéraire
- E is period exogenous endowment of consumption good
- Labor supply:
$$L_t = \frac{1}{B} - \frac{E}{w_t}$$

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - × Capital market opens and capital allocation is decided
  - × v_t is realized
  - × Labor and final good markets open

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - Capital market opens and capital allocation is decided
  - v_t is realized
  - Labor and final good markets open

A Model

Firms

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - × Capital market opens and capital allocation is decided
  - × v_t is realized
  - × Labor and final good markets open

A Model

Firms

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - × Capital market opens and capital allocation is decided
  - × v_t is realized
  - × Labor and final good markets open

A Model

Firms

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - × Capital market opens and capital allocation is decided
  - × v_t is realized
  - × Labor and final good markets open

- Firms operate along a Leontiev production function

$$Y_t = \min\left(v_t K_t^{\alpha}, L_t\right)$$

- v_t is an aggregate capital quality shock
- Timing of decisions within period t:
  - × Capital market opens and capital allocation is decided
  - × v_t is realized
  - × Labor and final good markets open

A Model

Deterministic benchmark

- $v_t = v$ for all t
- $Y = \min\left(vK^{\alpha}, L\right)$
- Firms optimal capital demand is such that

$$v\alpha K^{\alpha-1} = r^{\star}$$

- Then, given the Leontief assumption, labor demand and production are

$$Y = L = vK^{\alpha} = vv^{\frac{1}{1-\alpha}}\left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}$$

- and wage is determined on the labor market:

$$w = \frac{E}{\frac{1}{B} - vv^{\frac{1}{1-\alpha}}\left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}}$$

A Model

Deterministic benchmark

- $v_t = v$ for all t
- $Y = \min(vK^\alpha, L)$
- Firms optimal capital demand is such that

$$v\alpha K^{\alpha-1} = r^\star$$

- Then, given the Leontief assumption, labor demand and production are

$$Y = L = vK^\alpha = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

- and wage is determined on the labor market:

$$w = \frac{E}{\frac{1}{B} - vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}}$$

A Model

Deterministic benchmark

- $v_t = v$ for all t
- $Y = \min(vK^{\alpha}, L)$
- Firms optimal capital demand is such that

$$v\alpha K^{\alpha-1} = r^{\star}$$

- Then, given the Leontief assumption, labor demand and production are

$$Y = L = vK^{\alpha} = vv^{\frac{1}{1-\alpha}}\left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}$$

- and wage is determined on the labor market:

$$w = \frac{E}{\frac{1}{B} - vv^{\frac{1}{1-\alpha}}\left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}}$$

A Model

Deterministic benchmark

- $v_t = v$ for all t
- $Y = \min(vK^\alpha, L)$
- Firms optimal capital demand is such that

$$v\alpha K^{\alpha-1} = r^\star$$

- Then, given the Leontief assumption, labor demand and production are

$$Y = L = vK^\alpha = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

- and wage is determined on the labor market:

$$w = \frac{E}{\frac{1}{B} - vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}}$$

A Model

Deterministic benchmark

- $v_t = v$ for all t
- $Y = \min(vK^\alpha, L)$
- Firms optimal capital demand is such that

$$v\alpha K^{\alpha-1} = r^\star$$

- Then, given the Leontief assumption, labor demand and production are

$$Y = L = vK^\alpha = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

- and wage is determined on the labor market:

$$w = \frac{E}{\frac{1}{B} - vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}}$$

A Model

Deterministic benchmark

- $$Y = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$
- Y is increasing in v
- Y is decreasing in $r^\star$
- $r^\star$ and v move L and w in the same direction
- B moves w but not L

A Model

Deterministic benchmark

- $$Y = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$
- Y is increasing in v
- Y is decreasing in $r^\star$
- $r^\star$ and v move L and w in the same direction
- B moves w but not L

A Model

Deterministic benchmark

- $$Y = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$
- Y is increasing in v
- Y is decreasing in $r^\star$
- $r^\star$ and v move L and w in the same direction
- B moves w but not L

A Model

Deterministic benchmark

- $$Y = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}$$
- Y is increasing in v
- Y is decreasing in $r^{\star}$
- $r^{\star}$ and v move L and w in the same direction
- B moves w but not L

A Model

Deterministic benchmark

- $$Y = vv^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^{\star}}\right)^{\frac{\alpha}{1-\alpha}}$$
- Y is increasing in v
- Y is decreasing in $r^{\star}$
- $r^{\star}$ and v move L and w in the same direction
- B moves w but not L

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \;\; \overline{v}]$
- denote $E(v) = \frac{\overline{v}-\underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v)\alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \;\; \overline{v}]$
- denote $E(v) = \frac{\overline{v}-\underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v)\alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \;\; \overline{v}]$
- denote $E(v) = \frac{\overline{v} - \underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v)\alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \quad \overline{v}]$
- denote $E(v) = \frac{\overline{v} - \underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v)\alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \quad \overline{v}]$
- denote $E(v) = \frac{\overline{v} - \underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v) \alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star} \right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Stochastic Model with Perfect Information

- Assume v is *i.i.d.*
- v uniformly distributed on $[\underline{v} \;\; \overline{v}]$
- denote $E(v) = \frac{\overline{v}-\underline{v}}{2}$
- Now firms install capital according to $E(v)$, and then demand labor according to installed K and *realized* v_t
- Capital demand

$$E(v)\alpha K_t^{\alpha-1} = r^\star$$

- Production

$$Y_t = v_t E(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

A Model

Impulse Response

- $v_{t<0} = E(v)$
- $v_{t=0} = E(v) - \delta$
- $v_{t>0} = E(v)$

A Model

Impulse Response

- $v_{t<0} = E(v)$
- $v_{t=0} = E(v) - \delta$
- $v_{t>0} = E(v)$

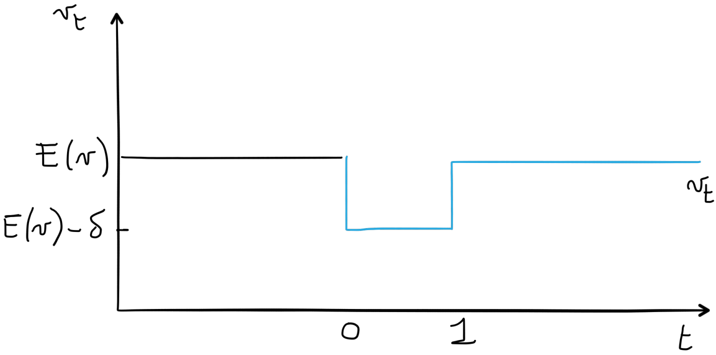
A Model

Impulse Response

- $v_{t<0} = E(v)$
- $v_{t=0} = E(v) - \delta$
- $v_{t>0} = E(v)$

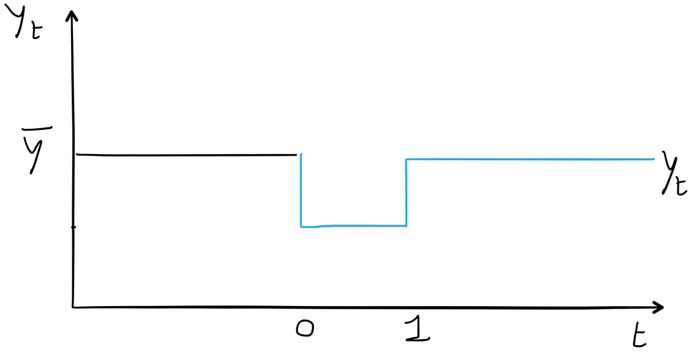
A Model

Impulse Response



A Model

Impulse Response



A Model

Impulse Response

- Y inherits the properties of v
- Y is proportional to v
- The dynamics of the model comes fully from the shocks
- Boring...

- Y inherits the properties of v
- Y is proportional to v
- The dynamics of the model comes fully from the shocks
- Boring...

- Y inherits the properties of v
- Y is proportional to v
- The dynamics of the model comes fully from the shocks
- Boring...

- Y inherits the properties of v
- Y is proportional to v
- The dynamics of the model comes fully from the shocks
- Boring...

A Model

Stochastic Model with Learning

- As in KVV, I assume that agents must estimate the aggregate shock distribution
- Their common information set includes all aggregate and shocks observed up to time-t.
- At each point in time, they use the empirical distribution of v_t up to that point to construct an estimate of v
- With uniform distribution, that problem is super simple (analytic)...
- ... but conveys the main intuition of the paper

- As in KVV, I assume that agents must estimate the aggregate shock distribution
- Their common information set includes all aggregate and shocks observed up to time-t.
- At each point in time, they use the empirical distribution of v_t up to that point to construct an estimate of v
- With uniform distribution, that problem is super simple (analytic)...
- ... but conveys the main intuition of the paper

A Model

Stochastic Model with Learning

- As in KVV, I assume that agents must estimate the aggregate shock distribution
- Their common information set includes all aggregate and shocks observed up to time-t.
- At each point in time, they use the empirical distribution of v_t up to that point to construct an estimate of v
- With uniform distribution, that problem is super simple (analytic)...
- ... but conveys the main intuition of the paper

- As in KVV, I assume that agents must estimate the aggregate shock distribution
- Their common information set includes all aggregate and shocks observed up to time-t.
- At each point in time, they use the empirical distribution of v_t up to that point to construct an estimate of v
- With uniform distribution, that problem is super simple (analytic)...
- ... but conveys the main intuition of the paper

- As in KVV, I assume that agents must estimate the aggregate shock distribution
- Their common information set includes all aggregate and shocks observed up to time-t.
- At each point in time, they use the empirical distribution of v_t up to that point to construct an estimate of v
- With uniform distribution, that problem is super simple (analytic)...
- ... but conveys the main intuition of the paper

Stochastic Model with Learning

- I assume that it is common knowledge that shocks are uniformly distributed on $[\underline{v} \;\; \overline{v}]$ ...
- ... but $\underline{v}$ and $\overline{v}$ are not known, but agent can learn about them.
- Given an history up to $t = 0$, the estimates of $\underline{v}$ and $\overline{v}$ are

$$\underline{v}_0 = \min\{v_{t<0}\}$$
$$\overline{v}_0 = \max\{v_{t<0}\}$$

- and
$$E_0(v) = \frac{\max\{v_{t<0}\} - \min\{v_{t<0}\}}{2}$$
- $E_0(v)$ is directly affected by a measure of *dispersion* of the shocks $\rightsquigarrow$ tails matter.

A Model

Stochastic Model with Learning

- I assume that it is common knowledge that shocks are uniformly distributed on $[\underline{v} \;\; \overline{v}]$ ...
- ... but $\underline{v}$ and $\overline{v}$ are not known, but agent can learn about them.
- Given an history up to $t = 0$, the estimates of $\underline{v}$ and $\overline{v}$ are

$$\underline{v}_0 = \min\{v_{t<0}\}$$

$$\overline{v}_0 = \max\{v_{t<0}\}$$

- and

$$E_0(v) = \frac{\max\{v_{t<0}\} - \min\{v_{t<0}\}}{2}$$

- $E_0(v)$ is directly affected by a measure of *dispersion* of the shocks $\rightsquigarrow$ tails matter.

- I assume that it is common knowledge that shocks are uniformly distributed on $[\underline{v}\ \ \overline{v}]$ ...
- ... but $\underline{v}$ and $\overline{v}$ are not known, but agent can learn about them.
- Given an history up to $t = 0$, the estimates of $\underline{v}$ and $\overline{v}$ are

$$\underline{v}_0 = \min\{v_{t<0}\}$$

$$\overline{v}_0 = \max\{v_{t<0}\}$$

- and

$$E_0(v) = \frac{\max\{v_{t<0}\} - \min\{v_{t<0}\}}{2}$$

- $E_0(v)$ is directly affected by a measure of *dispersion* of the shocks $\rightsquigarrow$ tails matter.

A Model

Stochastic Model with Learning

- I assume that it is common knowledge that shocks are uniformly distributed on $[\underline{v} \;\; \overline{v}]$ ...
- ... but $\underline{v}$ and $\overline{v}$ are not known, but agent can learn about them.
- Given an history up to $t = 0$, the estimates of $\underline{v}$ and $\overline{v}$ are

$$\underline{v}_0 = \min\{v_{t<0}\}$$

$$\overline{v}_0 = \max\{v_{t<0}\}$$

- and

$$E_0(v) = \frac{\max\{v_{t<0}\} - \min\{v_{t<0}\}}{2}$$

- $E_0(v)$ is directly affected by a measure of *dispersion* of the shocks $\rightsquigarrow$ tails matter.

A Model

Stochastic Model with Learning

- I assume that it is common knowledge that shocks are uniformly distributed on $[\underline{v} \quad \overline{v}]$ ...
- ... but $\underline{v}$ and $\overline{v}$ are not known, but agent can learn about them.
- Given an history up to $t = 0$, the estimates of $\underline{v}$ and $\overline{v}$ are

$$\underline{v}_0 = \min\{v_{t<0}\}$$

$$\overline{v}_0 = \max\{v_{t<0}\}$$

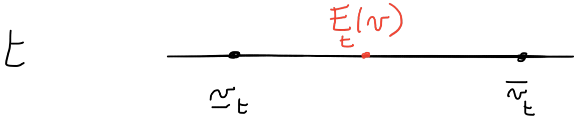
- and

$$E_0(v) = \frac{\max\{v_{t<0}\} - \min\{v_{t<0}\}}{2}$$

- $E_0(v)$ is directly affected by a measure of *dispersion* of the shocks $\rightsquigarrow$ tails matter.

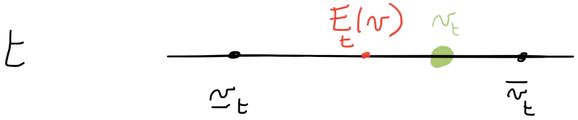
A Model

Stochastic Model with Learning



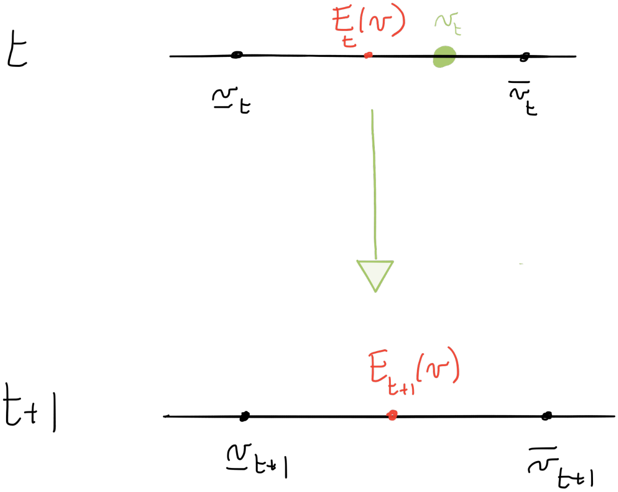
A Model

Stochastic Model with Learning



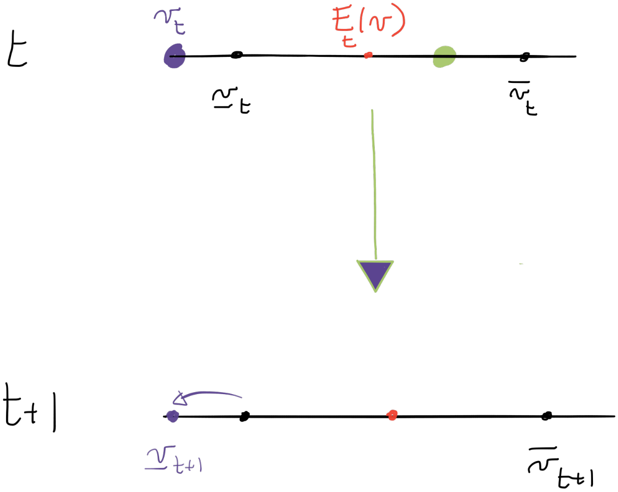
A Model

Stochastic Model with Learning



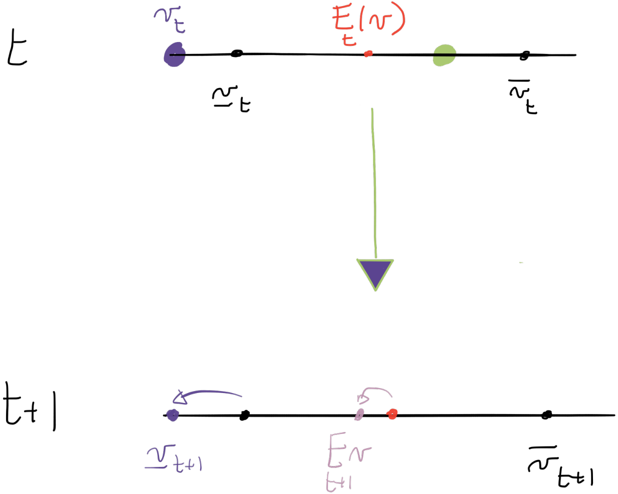
A Model

Stochastic Model with Learning



A Model

Stochastic Model with Learning



- The model dynamics is now given by

$$E_t(v) = \frac{\max\{v_{\tau<t}\} - \min\{v_{\tau<t}\}}{2}$$

$$Y_t = v_t E_t(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

- Depending on the size of the current shock with respect to past ones, shocks will have temporary or permanent effect.

- The model dynamics is now given by

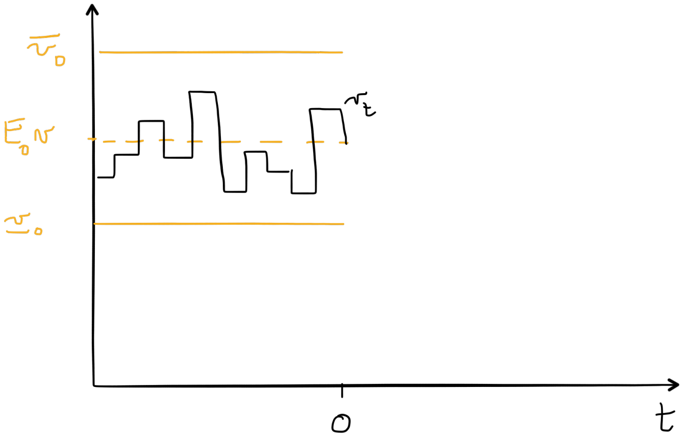
$$E_t(v) = \frac{\max\{v_{\tau<t}\} - \min\{v_{\tau<t}\}}{2}$$

$$Y_t = v_t E_t(v)^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^\star}\right)^{\frac{\alpha}{1-\alpha}}$$

- Depending on the size of the current shock with respect to past ones, shocks will have temporary or permanent effect.

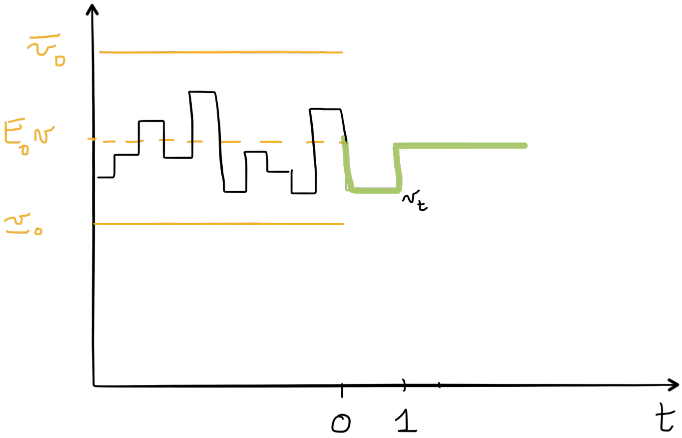
A Model

Stochastic Model with Learning



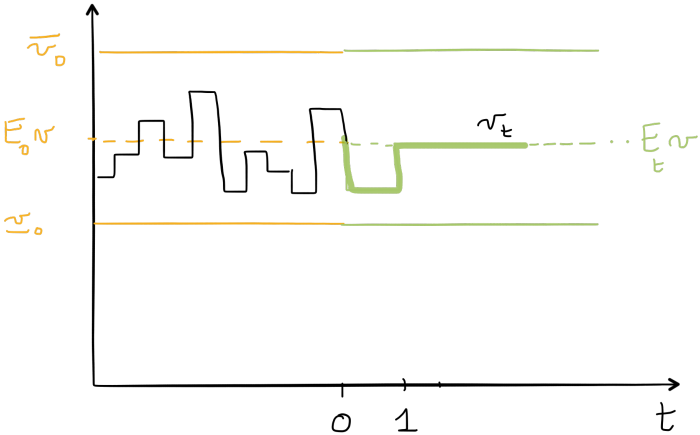
A Model

Stochastic Model with Learning



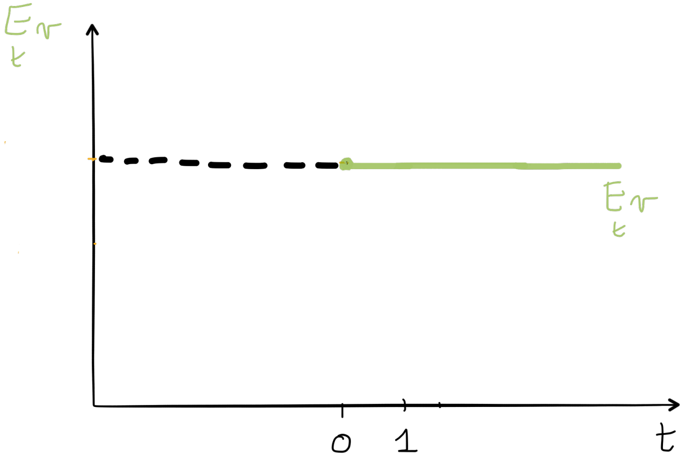
A Model

Stochastic Model with Learning



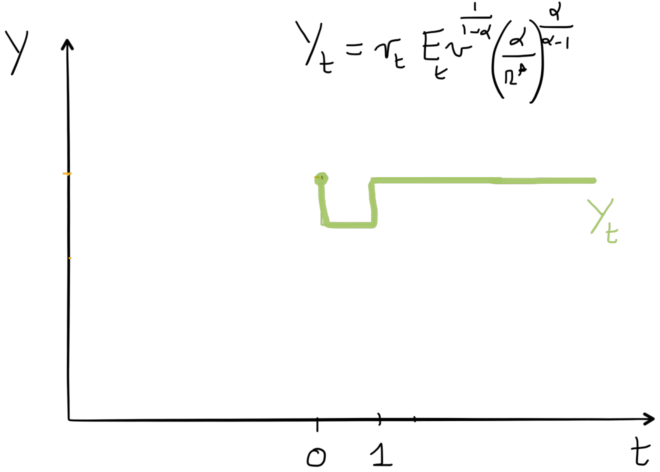
A Model

Stochastic Model with Learning



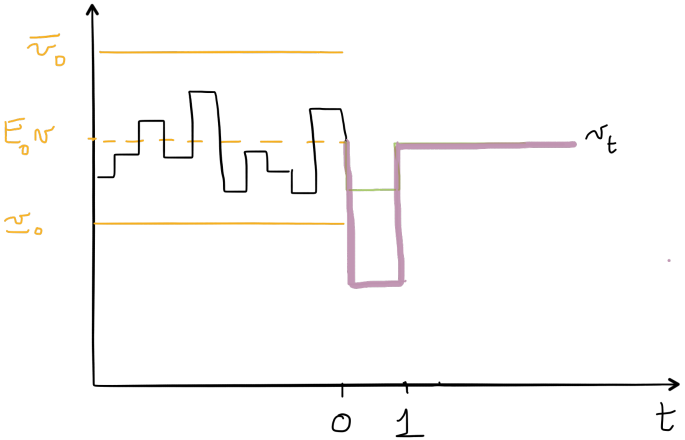
A Model

Stochastic Model with Learning



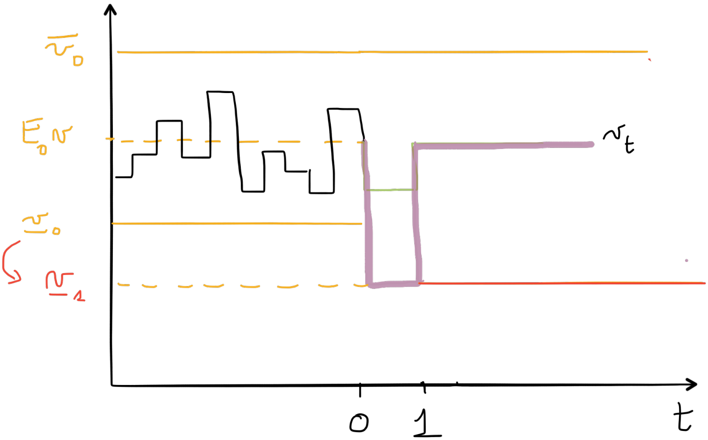
A Model

Stochastic Model with Learning



A Model

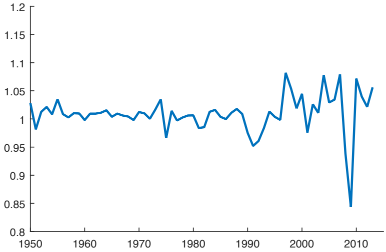
Stochastic Model with Learning

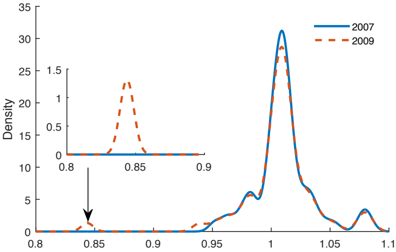


A Model

Stochastic Model with Learning

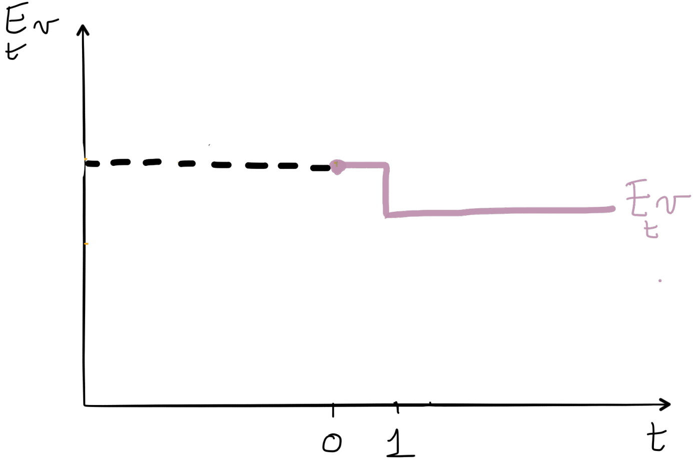
- Note the analogy with the  Model





A Model

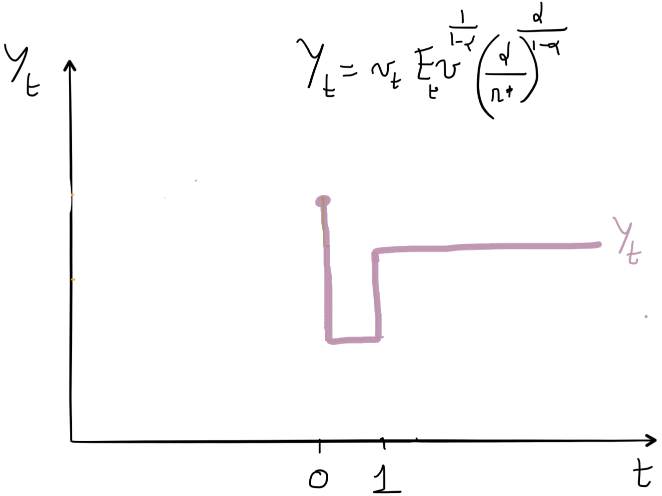
Stochastic Model with Learning



A Model

Stochastic Model with Learning

$$Y_t = v_t \, E_t v^{\frac{1}{1-\alpha}} \left(\frac{\alpha}{r^*}\right)^{\frac{\alpha}{1-\alpha}}$$



A Model

Including "Finance" and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

A Model

Including "Finance" and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

A Model

Including "Finance" and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

A Model

Including "Finance" and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

A Model

Including “Finance” and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

A Model

Including "Finance" and Default

- Add idiosyncratic risk anf fixed costs

$$Y_t = \min\left(u_{it} v_t K_t^{\alpha}, L_t\right) - F$$

- Firms that draw a too low u_{it} are not profitable ex post
- They give back their capital (the collateral of their loan) *before* producing
- At the steady state, there is always a fraction of firms that default and close.
- That fraction will be larger permanently after a big shock
- Shocks are also amplified on impact by an extensive margin adjustment : not only firms produce less and revise downward $E(v)$, but more capital is *ex post* idle.

Roadmap

2. The  Model

2. The  Model

A serious model

- A fully G.E. model with intertemporal decisions
- Finance introduced, gives nice amplification ...
- ... but is not at the core of the mechanism
- Nice way to discipline the exercice by measuring the $\phi(v)$ shock
- The story is not one of the effect of a disaster that we have never observed, but that of an observed disaster.

2. The  Model

A serious model

- A fully G.E. model with intertemporal decisions
- Finance introduced, gives nice amplification ...
- ... but is not at the core of the mechanism
- Nice way to discipline the exercice by measuring the $\phi\ (v)$ shock
- The story is not one of the effect of a disaster that we have never observed, but that of an observed disaster.

2. The  Model

A serious model

- A fully G.E. model with intertemporal decisions
- Finance introduced, gives nice amplification ...
- ... but is not at the core of the mechanism
- Nice way to discipline the exercice by measuring the $\phi(v)$ shock
- The story is not one of the effect of a disaster that we have never observed, but that of an observed disaster.

2. The  Model

A serious model

- A fully G.E. model with intertemporal decisions
- Finance introduced, gives nice amplification ...
- ... but is not at the core of the mechanism
- Nice way to discipline the exercice by measuring the ϕ (v) shock
- The story is not one of the effect of a disaster that we have never observed, but that of an observed disaster.

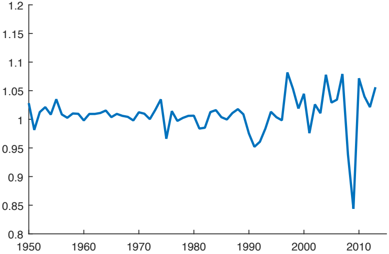
2. The  Model

A serious model

- A fully G.E. model with intertemporal decisions
- Finance introduced, gives nice amplification ...
- ... but is not at the core of the mechanism
- Nice way to discipline the exercice by measuring the $\phi\ (v)$ shock
- The story is not one of the effect of a disaster that we have never observed, but that of an observed disaster.

2. The  Model

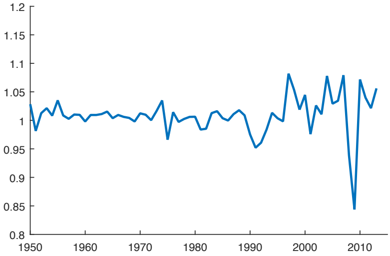
The need for a big impulse



- Clearly something happened in 2008 and 2009
- Is $\phi(v)$ the primitive shock?
- Where do we read about a 15% drop of the capital quality?
- What could it be?

2. The  Model

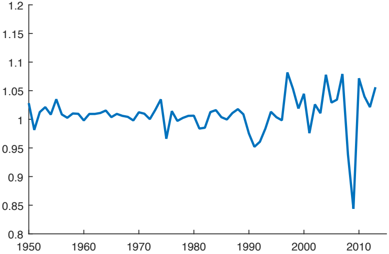
The need for a big impulse



- Clearly something happened in 2008 and 2009
- Is ϕ (v) the primitive shock?
- Where do we read about a 15% drop of the capital quality?
- What could it be?

2. The  Model

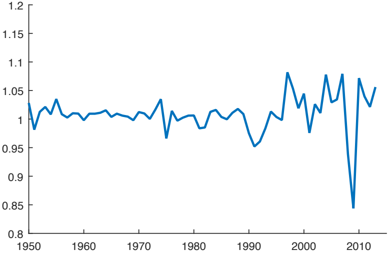
The need for a big impulse



- Clearly something happened in 2008 and 2009
- Is ϕ (v) the primitive shock?
- Where do we read about a 15% drop of the capital quality?
- What could it be?

2. The  Model

The need for a big impulse



- Clearly something happened in 2008 and 2009
- Is ϕ (v) the primitive shock?
- Where do we read about a 15% drop of the capital quality?
- What could it be?

2. The  Model

Modeling the drop in $\phi(v)$

- Do I understand well that a drop in the observed q will be measured as a drop in $\phi(v)$
- Perception revisions of the the type: *"I realize that my investment will not be as profitable as I thought"* can be seen as an explanation for recessions
- "News Driven Business Cycles: Insights and Challenges", Beaudry and Portier, Journal of Economic Literature (2015).
- Do such expectation-driven booms and busts create variations in measured $\phi(v)$?

2. The  Model

Modeling the drop in $\phi(v)$

- Do I understand well that a drop in the observed q will be measured as a drop in $\phi(v)$
- Perception revisions of the the type: *"I realize that my investment will not be as profitable as I thought"* can be seen as an explanation for recessions
- "News Driven Business Cycles: Insights and Challenges", Beaudry and Portier, Journal of Economic Literature (2015).
- Do such expectation-driven booms and busts create variations in measured $\phi(v)$?

2. The  Model

Modeling the drop in $\phi(v)$

- Do I understand well that a drop in the observed q will be measured as a drop in $\phi(v)$
- Perception revisions of the the type: *"I realize that my investment will not be as profitable as I thought"* can be seen as an explanation for recessions
- "News Driven Business Cycles: Insights and Challenges", Beaudry and Portier, Journal of Economic Literature (2015).
- Do such expectation-driven booms and busts create variations in measured $\phi(v)$?

2. The  Model

Modeling the drop in $\phi(v)$

- Do I understand well that a drop in the observed q will be measured as a drop in $\phi(v)$
- Perception revisions of the the type: *"I realize that my investment will not be as profitable as I thought"* can be seen as an explanation for recessions
- "News Driven Business Cycles: Insights and Challenges", Beaudry and Portier, Journal of Economic Literature (2015).
- Do such expectation-driven booms and busts create variations in measured $\phi(v)$?

2. The  Model

What do we observe?

- What is an observation?
  - × a quarter? 220 observations since 1960
  - × a cycle? 7 observations
- In the former case, we may have still a lot to learn, and therefore a lot of mistakes to make

2. The  Model

What do we observe?

- What is an observation?
  - a quarter? 220 observations since 1960
  - a cycle? 7 observations
- In the former case, we may have still a lot to learn, and therefore a lot of mistakes to make

2. The  Model

What do we observe?

- What is an observation?
  - × a quarter? 220 observations since 1960
  - × a cycle? 7 observations
- In the former case, we may have still a lot to learn, and therefore a lot of mistakes to make

2. The  Model

What do we observe?

- What is an observation?
  - × a quarter? 220 observations since 1960
  - × a cycle? 7 observations
- In the former case, we may have still a lot to learn, and therefore a lot of mistakes to make