

Inventories, Lumpy Trade, and Large Devaluations - by G. Alessandria, J. Kaboski and V. Midrigan

Discussion by Ruediger Bachmann, Univ. of Michigan

ESSIM 2008.
May 24, 2008.

Overview


- It's been a pleasure to read this paper.

Overview

- It's been a pleasure to read this paper.



Overview

- It's been a pleasure to read this paper.
- 
- I learned a lot ...

Overview

- It's been a pleasure to read this paper.
- 😊
- I learned a lot ...
- 😊

Overview

- It's been a pleasure to read this paper.



- I learned a lot ...



- ... I should have known.

Overview

- It's been a pleasure to read this paper.



- I learned a lot ...



- ... I should have known.

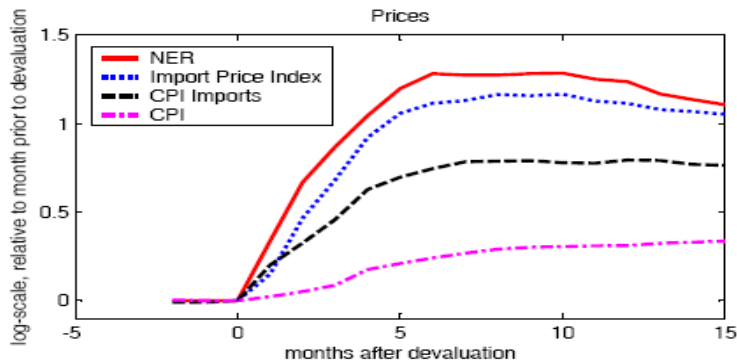


Overview

- Contribution and results.
- Three major issues.
- Minor issues.

Contribution

Primary contribution: give (another) micro-founded and micro-calibrated explanation of incomplete pass-through from import prices to retail prices in the aftermath of large devaluations:



Contribution

Basic idea in a markup model:

Contribution

Basic idea in a markup model:

- $p = \frac{\theta}{\theta-1} (\omega + \tilde{\omega})$, $p' = \frac{\theta}{\theta-1} (\omega' + \tilde{\omega})$ with ω import price and $\omega' = \phi\omega$ the new import price, then, obviously,

Contribution

Basic idea in a markup model:

- $p = \frac{\theta}{\theta-1} (\omega + \tilde{\omega})$, $p' = \frac{\theta}{\theta-1} (\omega' + \tilde{\omega})$ with ω import price and $\omega' = \phi\omega$ the new import price, then, obviously,
- $\frac{p'}{p} = \frac{\phi\omega + \tilde{\omega}}{\omega + \tilde{\omega}} < \phi$ if $\phi > 1$.

Contribution

Basic idea in a markup model:

- $p = \frac{\theta}{\theta-1} (\omega + \tilde{\omega})$, $p' = \frac{\theta}{\theta-1} (\omega' + \tilde{\omega})$ with ω import price and $\omega' = \phi\omega$ the new import price, then, obviously,
- $\frac{p'}{p} = \frac{\phi\omega + \tilde{\omega}}{\omega + \tilde{\omega}} < \phi$ if $\phi > 1$.
- Incomplete pass-through is generated by the mark-up being on a base which is different from the object that has changed (ω).

Contribution

Basic idea in a markup model:

- $p = \frac{\theta}{\theta-1} (\omega + \tilde{\omega})$, $p' = \frac{\theta}{\theta-1} (\omega' + \tilde{\omega})$ with ω import price and $\omega' = \phi\omega$ the new import price, then, obviously,
- $\frac{p'}{p} = \frac{\phi\omega + \tilde{\omega}}{\omega + \tilde{\omega}} < \phi$ if $\phi > 1$.
- Incomplete pass-through is generated by the mark-up being on a base which is different from the object that has changed (ω).
- In this paper: $\tilde{\omega}$ is the shadow value of inventory.

Contribution

Basic idea in a markup model:

- $p = \frac{\theta}{\theta-1} (\omega + \tilde{\omega})$, $p' = \frac{\theta}{\theta-1} (\omega' + \tilde{\omega})$ with ω import price and $\omega' = \phi\omega$ the new import price, then, obviously,
- $\frac{p'}{p} = \frac{\phi\omega + \tilde{\omega}}{\omega + \tilde{\omega}} < \phi$ if $\phi > 1$.
- Incomplete pass-through is generated by the mark-up being on a base which is different from the object that has changed (ω).
- In this paper: $\tilde{\omega}$ is the shadow value of inventory.
- With inventories, a decline in the shadow value of inventory on impact (decline in $\tilde{\omega}$) caused by a large permanent devaluation (increase in ω) leads to an inventory overhang and slows down pass-through.

Contribution

Secondary contribution: give a micro-foundation for inventory holdings of imported goods (that are supposedly larger than the ones for domestic goods) and document its empirical validity (using a sample of Chilean manufacturing plants and a detailed data set on a US steel wholesaler).

Contribution

Secondary contribution: give a micro-foundation for inventory holdings of imported goods (that are supposedly larger than the ones for domestic goods) and document its empirical validity (using a sample of Chilean manufacturing plants and a detailed data set on a US steel wholesaler).

- 1 Time lags in delivery.

Contribution

Secondary contribution: give a micro-foundation for inventory holdings of imported goods (that are supposedly larger than the ones for domestic goods) and document its empirical validity (using a sample of Chilean manufacturing plants and a detailed data set on a US steel wholesaler).

- 1 Time lags in delivery.
- 2 Non-convex upward inventory adjustment costs.

Contribution

Secondary contribution: give a micro-foundation for inventory holdings of imported goods (that are supposedly larger than the ones for domestic goods) and document its empirical validity (using a sample of Chilean manufacturing plants and a detailed data set on a US steel wholesaler).

- 1 Time lags in delivery.
- 2 Non-convex upward inventory adjustment costs.

Contribution

Secondary contribution: give a micro-foundation for inventory holdings of imported goods (that are supposedly larger than the ones for domestic goods) and document its empirical validity (using a sample of Chilean manufacturing plants and a detailed data set on a US steel wholesaler).

- 1 Time lags in delivery.
- 2 Non-convex upward inventory adjustment costs.

Use data (in particular observed and documented lumpiness in imports) to calibrate these two frictions in the model and then test the model's implications for the aggregate: this is good quantitative heterogeneous agent macro!

Contribution

Other model features:

Contribution

Other model features:

- 1 A continuum of monopolistic competitive importers makes three decisions: whether to increase inventory (S,s-policy), by how much and their retail price.

Contribution

Other model features:

- 1 A continuum of monopolistic competitive importers makes three decisions: whether to increase inventory (S,s-policy), by how much and their retail price.
- 2 Retail prices are completely flexible.

Contribution

Other model features:

- ① A continuum of monopolistic competitive importers makes three decisions: whether to increase inventory (S,s-policy), by how much and their retail price.
- ② Retail prices are completely flexible.
- ③ Importers take the import price of their commodity as well as the inventory adjustment costs as parameters. The model is partial equilibrium (small open economy), there is no domestic equilibrium interaction, either.

Contribution

Other model features:

- 1 A continuum of monopolistic competitive importers makes three decisions: whether to increase inventory (S,s-policy), by how much and their retail price.
- 2 Retail prices are completely flexible.
- 3 Importers take the import price of their commodity as well as the inventory adjustment costs as parameters. The model is partial equilibrium (small open economy), there is no domestic equilibrium interaction, either.
- 4 Importers are characterized by two states, one exogenously and iid given demand shock (they face a standard isoelastic demand function), the level of inventories is the endogenous state variable.

Contribution

Other model features:

- 1 A continuum of monopolistic competitive importers makes three decisions: whether to increase inventory (S,s-policy), by how much and their retail price.
- 2 Retail prices are completely flexible.
- 3 Importers take the import price of their commodity as well as the inventory adjustment costs as parameters. The model is partial equilibrium (small open economy), there is no domestic equilibrium interaction, either.
- 4 Importers are characterized by two states, one exogenously and iid given demand shock (they face a standard isoelastic demand function), the level of inventories is the endogenous state variable.
- 5 Import orders are irreversible, i.e. there is no downward adjustment of inventories other than sale in the domestic market.

Contribution

Summary of the main results:

Summary of the main results:

- 1 The model generates on impact only 75% pass-through from import prices to retail prices of imported goods.

Summary of the main results:

- 1 The model generates on impact only 75% pass-through from import prices to retail prices of imported goods.
- 2 The model generates a sudden and short-lived import collapse, consistent with the data.

Summary of the main results:

- 1 The model generates on impact only 75% pass-through from import prices to retail prices of imported goods.
- 2 The model generates a sudden and short-lived import collapse, consistent with the data.
- 3 This import collapse is driven to 2/3 by the extensive margin (how many goods?) and to 1/3 by the intensive margin (how much of each good?), again consistent with the data.

Major Issues - I

The connection between the primary contribution and the secondary contribution:

Major Issues - I

The connection between the primary contribution and the secondary contribution:

- Does it matter for the primary explanandum - incomplete pass-through - where the inventories come from, given the level of inventories?

Major Issues - I

The connection between the primary contribution and the secondary contribution:

- Does it matter for the primary explanandum - incomplete pass-through - where the inventories come from, given the level of inventories?
- The authors spent some time to discuss the relative contribution of delivery lags and fixed costs (and find roughly $1/3 - 2/3$), but it is not clear whether these differences arise solely through the implied level differences in inventories or whether there is some additional channel.

Major Issues - I

- If this additional channel exists, it would be interesting to know. My guess is that it will come through the transition path of the shadow value of inventory after the devaluation.

Major Issues - I

- If this additional channel exists, it would be interesting to know. My guess is that it will come through the transition path of the shadow value of inventory after the devaluation.
- If it does not exist, then the empirical efforts become less interesting (they are due to data limitations of merely illustrative power anyhow): why spend so much time illustrating lumpiness in orders or illustrating that imported goods exhibit higher inventories? This does not speak per se against the current micro-modeling, just that the empirical part could be downplayed.

Major Issues - II

Push a little harder to try to "falsify" your model:

Major Issues - II

Push a little harder to try to "falsify" your model:

- What statistics are not matched?

Major Issues - II

Push a little harder to try to "falsify" your model:

- What statistics are not matched?
- Most "robustness checks" do not seem to be robustness checks at all: it is a priori clear that they will "help" the main point of the paper.

Major Issues - II

Push a little harder to try to "falsify" your model:

- What statistics are not matched?
- Most "robustness checks" do not seem to be robustness checks at all: it is a priori clear that they will "help" the main point of the paper.
- Increasing the interest rate and therefore the cost of inventory accompanying a large devaluation makes the inventory overhang obviously more severe and therefore reduces the shadow value of inventory even more.

Major Issues - II

Push a little harder to try to "falsify" your model:

- What statistics are not matched?
- Most "robustness checks" do not seem to be robustness checks at all: it is a priori clear that they will "help" the main point of the paper.
- Increasing the interest rate and therefore the cost of inventory accompanying a large devaluation makes the inventory overhang obviously more severe and therefore reduces the shadow value of inventory even more.
- Similarly for a concomitant demand collapse.

Major Issues - II

- And using sticky wages (whether this is a factually accurate assumption or not) in a model with substitution between imported intermediate goods and local labor obviously prevents the retail price from increasing more through an increase in real wages that a substitution away from intermediate goods into labor would produce.

Major Issues - II

- And using sticky wages (whether this is a factually accurate assumption or not) in a model with substitution between imported intermediate goods and local labor obviously prevents the retail price from increasing more through an increase in real wages that a substitution away from intermediate goods into labor would produce.
- The large devaluation episodes we are presented - are they the whole historical set (forgive my ignorance)? Put differently: are there cross-sectionally or historically no similar episodes where there was no such lack of pass-through and can the model explain that as well (because for some reason inventories were not as important there/then)?

Major Issues - II

- And using sticky wages (whether this is a factually accurate assumption or not) in a model with substitution between imported intermediate goods and local labor obviously prevents the retail price from increasing more through an increase in real wages that a substitution away from intermediate goods into labor would produce.
- The large devaluation episodes we are presented - are they the whole historical set (forgive my ignorance)? Put differently: are there cross-sectionally or historically no similar episodes where there was no such lack of pass-through and can the model explain that as well (because for some reason inventories were not as important there/then)?
- Can the Thailand devaluation with its more gradual patterns also be explained with the model?

Major Issues - II

- Can we correlate pass-through with the inventory-intensity of a good in the data?

Major Issues - II

- Can we correlate pass-through with the inventory-intensity of a good in the data?
- The real friction in this model is somewhat glossed over: it is the absolute irreversibility constraint for inventories that causes the overhang! The authors could run the following stress test on their model: how weak must this partial irreversibility be in order to lead to substantial pass-through.

Major Issues - II

- Can we correlate pass-through with the inventory-intensity of a good in the data?
- The real friction in this model is somewhat glossed over: it is the absolute irreversibility constraint for inventories that causes the overhang! The authors could run the following stress test on their model: how weak must this partial irreversibility be in order to lead to substantial pass-through.
- Persistent idiosyncratic "demand" shocks: they could reduce aggregate co-ordination in the model and lead to faster retail price adjustments than otherwise. If a firm gets a persistent demand shock it may adjust its retail price faster for idiosyncratic reasons, so on average the aggregate retail price may be less "sticky".

Major Issues - II

- Can we correlate pass-through with the inventory-intensity of a good in the data?
- The real friction in this model is somewhat glossed over: it is the absolute irreversibility constraint for inventories that causes the overhang! The authors could run the following stress test on their model: how weak must this partial irreversibility be in order to lead to substantial pass-through.
- Persistent idiosyncratic "demand" shocks: they could reduce aggregate co-ordination in the model and lead to faster retail price adjustments than otherwise. If a firm gets a persistent demand shock it may adjust its retail price faster for idiosyncratic reasons, so on average the aggregate retail price may be less "sticky".
- Maybe devise other real stress tests for the model.

Major Issues - III

Push the model a little harder on the quantitative side:

Major Issues - III

Push the model a little harder on the quantitative side:

- Just plot graphs with data and model predictions together for the main objects of interest.

Major Issues - III

Push the model a little harder on the quantitative side:

- Just plot graphs with data and model predictions together for the main objects of interest.
- Is the 75% pass through on impact a good fit or a bad fit?

Major Issues - III

Push the model a little harder on the quantitative side:

- Just plot graphs with data and model predictions together for the main objects of interest.
- Is the 75% pass through on impact a good fit or a bad fit?
- The Argentina graph shows complete pass-through on impact and divergence later. Is this just dirty data or should we take this seriously in light of the model?

Major Issues - III

- Do the model's implications for the extensive and the intensive margin of imports match the data not just in the $2/3 - 1/3$ -metric, but also in dynamics and timing (in the data the big effect does not always seem to be on impact and the recovery is more gradual)? Related: when some of what the authors call robustness checks (but are really more realistic features concurrent with large devaluations) are put in: does the $2/3 - 1/3$ -metric still hold or does the model overshoot with respect to the extensive margin?

Major Issues - III

- Do the model's implications for the extensive and the intensive margin of imports match the data not just in the $2/3 - 1/3$ -metric, but also in dynamics and timing (in the data the big effect does not always seem to be on impact and the recovery is more gradual)? Related: when some of what the authors call robustness checks (but are really more realistic features concurrent with large devaluations) are put in: does the $2/3 - 1/3$ -metric still hold or does the model overshoot with respect to the extensive margin?
- Maybe not in this paper, but still interesting to know: if we take other explanations for incomplete pass-through into account (nominal and other real rigidities and local factor content), and all micro-calibrate them, do we get the right amount of pass through or do we overshoot?

- The data part has its weaknesses: 1) Is one U.S. steel wholesaler really a good proxy for firms in Argentina or Thailand; 2) how good a proxy is Chile for other emerging markets both in terms of overall macroeconomic conditions as well as sectoral composition; 3) do we know, to what extent these importers serve the local market only, i.e. how good an assumption is irreversibility empirically?; 4) estimation equation (1) is only suggestive that imported goods exhibit larger inventories, the import content of firms and the aggregate firm inventories do not allow to make this inference.

Minor Issues

- Modeling inventory costs as depreciation may not be innocuous in an (S,s) -model, as it also means a higher drift (this is in particular true for the motivation of the corresponding robustness exercise with higher depreciation). In fact, having a lower depreciation rate but direct inventory costs should make the retail price respond more sluggishly, as the inventory overhang is eliminated more slowly (and therefore help the story).

Minor Issues

- Modeling inventory costs as depreciation may not be innocuous in an (S,s) -model, as it also means a higher drift (this is in particular true for the motivation of the corresponding robustness exercise with higher depreciation). In fact, having a lower depreciation rate but direct inventory costs should make the retail price respond more sluggishly, as the inventory overhang is eliminated more slowly (and therefore help the story).
- With a realistic (and sizeable?) variable cost component to international shipments, would the response of imports become more gradual in the recovery phase? Would this help or hurt when comparing the model to the data?

Minor Issues

- Modeling inventory costs as depreciation may not be innocuous in an (S,s)-model, as it also means a higher drift (this is in particular true for the motivation of the corresponding robustness exercise with higher depreciation). In fact, having a lower depreciation rate but direct inventory costs should make the retail price respond more sluggishly, as the inventory overhang is eliminated more slowly (and therefore help the story).
- With a realistic (and sizeable?) variable cost component to international shipments, would the response of imports become more gradual in the recovery phase? Would this help or hurt when comparing the model to the data?
- An expositional suggestion: depict decisions also as a function of ω . This would help the reader understand the comparative steady state exercise and the dynamics better.

Minor Issues

- Multiproduct firms and margins: the model features single-product firms, but to what extent - empirically - can multiproduct firms also bundle shipments and therefore - in the model - would decrease the contribution of the extensive margin?

Minor Issues

- Multiproduct firms and margins: the model features single-product firms, but to what extent - empirically - can multiproduct firms also bundle shipments and therefore - in the model - would decrease the contribution of the extensive margin?
- The higher depreciation case is likened to the higher interest rate case in the paper. However, while the latter is an increase in inventory costs concomitant with the devaluation shock, the former leads to more expensive inventories before and after the devaluation shock. Put differently: why does higher depreciation lead to a more severe inventory overhang on the margin after the shock and not just make inventories more expensive overall?

Conclusion

- Very interesting paper with an interesting piece of quantitative heterogeneous agent macro.
- Make the connection between the reasons for inventory and pass-through clearer.
- Stress-test the model a little more.
- Exploit it more quantitatively.
- And: definitely go for the applications in IBC theory, as announced in the conclusion.