# Old and new formulations of the neoclassical theory of aggregate investment: a critical review

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- What do we talk about when we talk about the ‘neoclassical theory of investment’?
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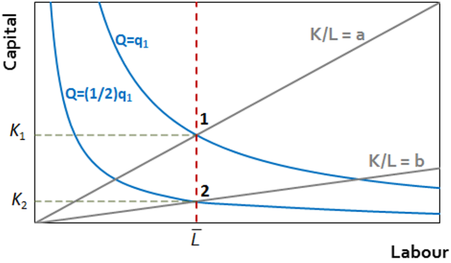
Old and new formulations of the neoclassical theory of aggregate investment:

- traditional Wicksellian investment function
- 'array of opportunities' approach
- modern 'Jorgensonian' approach
- adjustment-costs models

### The traditional (Wicksellian) investment function

Demand for capital and investment fully determined by the interest rate:

- Factor prices determine the optimal $K/L$ ratio; $L$ is given (determined by labor market equilibrium conditions); so $K^*$ is determined.
- $I$ gradually fills discrepancies between $K$ and $K^*$, so is also a negative function of the interest rate.



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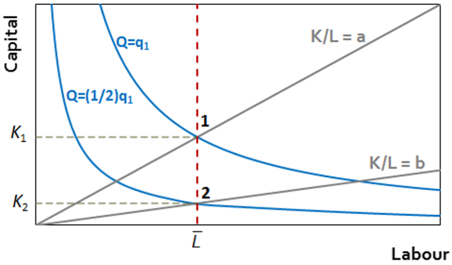


**Problems:**

- relies on a mistaken notion of capital as a single homogeneous factor (Cambridge capital critique)
- can we really take the labor market equilibrium as given when deriving the investment function? (Petri 2015 RoPE)

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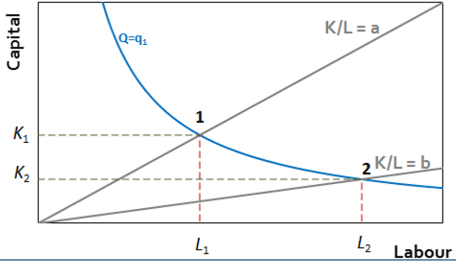
## Jorgenson's model

- aims to reformulate neoclassical investment theory using a micro-founded model: price-taking representative firm with Cobb-Douglas production function
- cost of capital determines optimal K/L ratio
- indeterminacy problem: $K^*$ remains undetermined under CRS
- two strands in the literature:
  1 - assume decreasing returns to scale
  2 - take output as given ('neoclassical accelerator')



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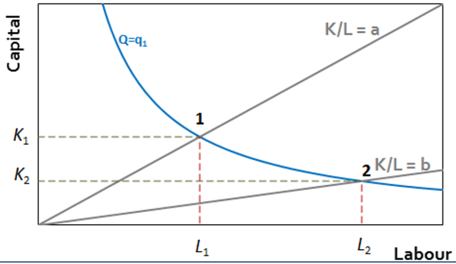


**Problems:**

- the first strand (assuming decreasing returns to scale) commits a fallacy of composition; the neoclassical accelerator does not;
- but both are still vulnerable to the Cambridge capital critique

## Adjustment-costs models

- adjustment costs: costs of altering the capital stock, besides the cost of purchasing capital goods;
- firms will choose the rate of adjustment by balancing the benefits and the costs of adjustments;
- convex adj.costs (neoclassical q): gradual and smooth investment path; optimal rate of expansion determined also under CRS;
- non-convex adjustment costs (generalized [S,s] model): lumpy investment; assumption of decreasing returns to scale;

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Problems:

- Fallacy of composition ⇒ indeterminate market equilibrium under free entry.
- Neglected dependence of prices from the interest rate (in convex models)
- Whole theory based on arbitrary assumptions about something fundamentally unobservable like adjustment costs.