A General Disequilibrium Model of Income and Employment

Barro & Grossman, AER 1971

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Context

- In many real economies, prices and wages do not adjust instantly. Firms may face unsold goods, and workers may not find jobs even if they are willing to work.
- Recessions are often marked by excess supply of goods and unemployment. Booms, by contrast, can feature excess demand, with goods shortages and reduced labor supply, even as prices and wages rise.
- Classical models with fully flexible prices cannot explain such coexistence of unemployment and unchanged or even rising real wages.
- These puzzles motivated economists to look for frameworks where markets can temporarily be out of equilibrium.

Research Question

- How are output and employment determined when goods or labor markets do **not** clear?
- What behavioral links arise from **quantity rationing**, and what do they imply for wages and unemployment?

Main Answer

- **Patinkin channel (goods $\Rightarrow$ labor):** When firms face unsold goods ($P_1 > P^*$), they cut production and hire only the labor needed for actual sales. $\Rightarrow$ *Excess supply of goods leads to unemployment.*
- **Clower channel (labor $\Rightarrow$ goods):** When households are rationed in the labor market ($x < x^S$), their income falls. $\Rightarrow$ *Lower income reduces effective demand for goods—Keynesian consumption function $C(Y)$.*
- **Integration (Barro–Grossman):** These two feedback channels jointly form a **general disequilibrium system**: recessions (excess supply) and booms (excess demand) are both characterized by underemployment and underproduction.

Illustration — Figure 1: The Transmission of Excess Supply (Patinkin, 1956)

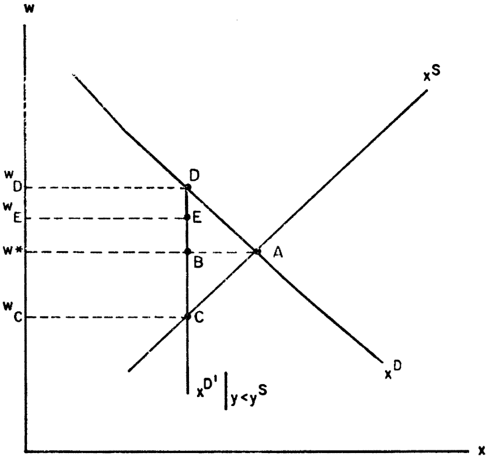

FIGURE 1. THE LABOR MARKET WITH EXCESS SUPPLY OF COMMODITIES

- When the price level is **too high** $(P_1 > P^*)$, firms face an **excess supply of goods**—they cannot sell all output.
- Sales constraints $(y < y^S)$ force firms to hire only the labor needed for actual sales:

$$x^{D'} = F^{-1}(y) < x^D$$

- As a result, the labor market also exhibits an **excess supply of labor (unemployment)**.
- **Mechanism (Patinkin):** a shortfall in the goods market is **transmitted** to the labor market through reduced **effective labor demand**.

Illustration — Figure 2: The Effective Demand Channel (Clower, 1965)

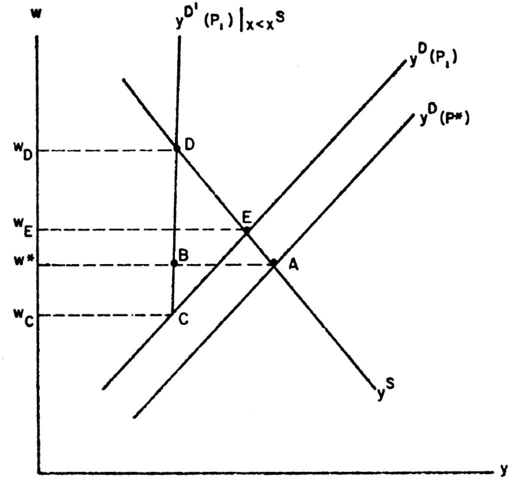

FIGURE 2. THE COMMODITY MARKET WITH EXCESS SUPPLY OF LABOR

- When the price level is still **above equilibrium** $(P_1 > P^*)$, firms hire less labor, so households are **rationed in the labor market** $(x < x^S)$.
- With lower income $(\pi + wx)$, their **effective demand for goods** $y^{D'}$ falls below the notional demand y^D.
- **Mechanism (Clower):** labor-market rationing ⇒ lower income ⇒ weaker goods demand.
- This is the **reverse channel** of Figure 1 and highlights the interdependence between goods and labor markets.

Illustration — Figure 4: Output and Employment(General Disequilibrium)

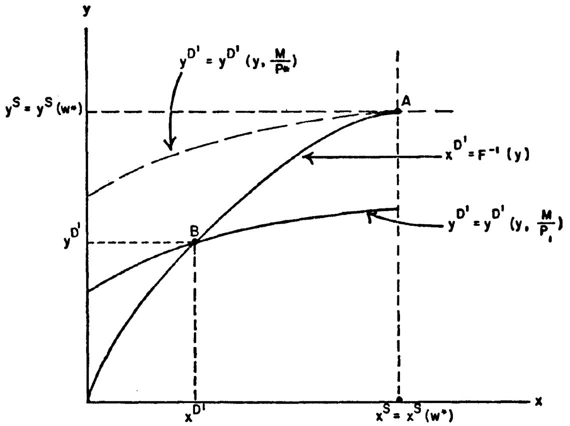

FIGURE 4. OUTPUT AND EMPLOYMENT WITH EXCESS SUPPLY IN BOTH MARKETS

- Combining both channels: **goods → labor** (Patinkin) and **labor → goods** (Clower).
- Actual employment and output are determined by **quantity constraints**:

$$x = \min(x^{D'}, x^S), \quad y = \min(y^{D'}, y^S)$$

- At point **B**, both goods and labor markets are constrained.
- A **lower price level** (or an **expansionary policy**) increases real purchasing power and shifts the **effective-demand curve** $y^{D'}$ upward.
- As demand recovers, the economy moves from **B** → **A**, returning to **full employment**.

Contributions & Limitations

Contributions

- **Transmission Mechanism:** Involuntary unemployment can arise even with flexible real wages— a quantity constraint in one market (*Patinkin / Clower*) is transmitted to the other.
- **Policy Implications:**
  1. **Recession (Excess Supply):** Policy must boost effective goods demand ($y^{D'}$) to break the vicious cycle and restore full employment.
  2. **Boom (Excess Demand):** When goods are rationed, households face persistent shortages and choose more leisure, so both output and employment stay below potential levels. Allowing prices to rise removes rationing and restores full employment.

Limitations

- Static, short-run model: no dynamic price or wage adjustment.
- Money and expectations simplified and only real balances matter.
- Hard to test empirically since quantity rationing is unobservable.