I. Monetary Unification - DeGrauwe

A. Costs of Currency Union

1. Loss of Independent Monetary Policy
   a. Demand Shocks: F-, G+ = F def, un; G sur, boom
   b. Adjust via wage flex or labor movement
   c. Immobile labor or inflex wage requires exchange rate
   d. Effect temporary, since shifts S as well as D

   ![Graph showing demand and supply curves for France and Germany]

2. Transition to common inflation rate imposes costs
   a. \( \pi - \pi^e = f(u - u_n) \) \( f' < 0 \)
   b. Italy vs Germany

   ![Graph showing inflation rates for Italy and Germany]

3. Differences in labor market institutions
   a. highly centralized bargaining internalizes the inflation externality
   b. decentralized bargaining internalizes the firm-specific increase in cost and loss of market share
   c. Hump-shaped inflation-centralization trade-off

4. Different Tax Systems - high reliance on seigniorage in Southern Europe DM/PY = 2.5-3.5% vs < 1% in North
   a. effect of fall in \( \pi \) on Italian budget deficit

5. Open-ness of Economy
   a. Speed of pass-through into costs faster if open
   b. Impact of fiscal policy on BOP higher if open
   Y - A = B, Y - (C + I + G) = X - M, Y' = (X + I + G)/(s + m)
   \( \frac{dY}{dG} = \frac{1}{s + m} \), \( \frac{dB}{dG} = -\frac{m}{s + m} \)
   c. Lower cost of union if highly open
B. Benefits of Currency Union
1. Reduced Transactions Costs - EU estimates ½% of GDP
2. Less Price Discrimination - mkt less segmented
3. Reduced uncertainty of prices
   a. Gain to risk-averse consumers
   b. Loss to risk-lovers who exploit price changes
   c. Reduced M  isalignment - resource misallocation
   d. Lower real interest rates reduce moral hazard & adverse selection in lending
   a. Steep preference trade-off (π, u) gives high π, same u; reduce by tying to low π currency
5. Effects on Growth - if lower interest rate raises capital intensity.
   Evidence against this for EMS.

C. Benefits vs. Costs
1. Benefits (trans cost, risk, cred) increase with open-ness.
2. Costs (loss of mon pol, slow pass-through) decrease with open-ness.
3. Relatively closed prefer flex, open prefer fix.
4. EC mi .25-.75, mEC = .123, mUS = .10, mJP = .114
5. Monetarists believe costs are low, Keynesians high.

Benefits, Costs
D. EC Snake
3. Membership reduced to DE, BeNeLx, DK, SW.
4. Weak financial support mechanism

E. EMS - 1979 Schmidt/Giscard d’Estaing proposal
1. reduce dependence on then-weak $, spread adjust. burden
2. Intervention Rules
   a. \[ ECU = \sum w_i e_i \], with ECU parity rates \( e \) and bilateral parities \( e_{ij} = e_i/e_j \).

<table>
<thead>
<tr>
<th>ECU Sept.’89</th>
<th>amt</th>
<th>EXR/$</th>
<th>amt in $</th>
<th>EXR/ECU</th>
<th>wt.</th>
<th>DM/CU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(1)/(2)</td>
<td>1.05</td>
<td>(1)/(4)</td>
<td>(4)/i</td>
</tr>
<tr>
<td>Deutschemark</td>
<td>.6242</td>
<td>1.9619</td>
<td>0.318</td>
<td>2.059</td>
<td>30.3</td>
<td>1.00</td>
</tr>
<tr>
<td>£ sterling</td>
<td>.0878</td>
<td>0.6859</td>
<td>0.128</td>
<td>0.72</td>
<td>12.2</td>
<td>2.860</td>
</tr>
<tr>
<td>French franc</td>
<td>1.332</td>
<td>6.5714</td>
<td>0.203</td>
<td>6.904</td>
<td>19.3</td>
<td>29.82</td>
</tr>
<tr>
<td>Italian lira</td>
<td>151.8</td>
<td>1412.93</td>
<td>0.107</td>
<td>1483.58</td>
<td>10.2</td>
<td>.1388</td>
</tr>
<tr>
<td>ECU</td>
<td>( w_i )</td>
<td>( e )</td>
<td>$1.05</td>
<td>1.00</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

b. Parity Grid ± 2½%. Both CB’s intervene at margins.
\[ DM/FF = 2.059/6.904 = 29.82 \text{ pfennig} ± 2½\% \]
If \( e \) is EXR/$ & \( g_i \) is DM/CU, \( g_i = e_{dm}/e \) then using Greek letter for parity:
\[ |(g_i - \gamma)/\gamma| = |(e_{dm} - \epsilon_{dm})/\epsilon_{dm} - (e - \epsilon)/\epsilon| \cdot 0.0225 \]
b. Unlimited Short-Term Credit for 75 days. EMCF credit up to 6 mos. $42 bil of gold & $ reserves.
3. Divergence Indicator: change interest rates if \( e - \epsilon_i > .75(2\frac{1}{4}\%)(1-w_i) = 1.6875(.67) = 1.13 \) for DM
4. Mutual Agreement for parity changes - to be frequent if needed (5:79-83; 3:84-87; 1:88-91)

F. Effects of EMS
1. reduced short-run variation in bilateral nominal & real exchange rates
2. no change in SR variation of multilateral RER
3. increased LR variation of multilateral RER, except DE.
4. reduced inflation in FR, DK, others? increased , DE.
5. Capital controls used by FR, IT to stay in EMS, until 1990 Single Market rules.

6. Differing role of seigniorage tax

<table>
<thead>
<tr>
<th></th>
<th>Seigniorage 1979-87</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% tax rev</td>
</tr>
<tr>
<td>Portugal</td>
<td>10.0</td>
</tr>
<tr>
<td>Greece</td>
<td>9.6</td>
</tr>
<tr>
<td>Spain</td>
<td>9.3</td>
</tr>
<tr>
<td>Italy</td>
<td>6.4</td>
</tr>
<tr>
<td>Ireland</td>
<td>2.3</td>
</tr>
<tr>
<td>France</td>
<td>1.3</td>
</tr>
<tr>
<td>Germany</td>
<td>0.7</td>
</tr>
</tbody>
</table>

7. Credibility
   a. up to 1987, frequent devaluations, low credibility.
   b. Speculative crisis implied run on currency.
   c. Assymmetry - German as hegemon set money growth, others peg to DM. Germany sterilizes intervention.
      Magnifies business cycle in periphery. Spreads shocks from center.

8. Convergence of Inflation Rates - 1980’s
   a. French & Italian fell sharply 1983-87. Also in non-EMS countries.
   b. Unemployment rose to '87, fell to '90, then rose.
   c. Unemploy. rose less, fell sooner, in non-EMS.
   d. Mon-Fiscal Pol. tighter in EMS.
   e. Slow reversal of U spiral in EMS suggests low credibility.

9. Collapse of EMS - end of cap controls 1990, rise in German interest rates, failure of Danish ref. on Maastricht, recession outside DE.

G. Delors Plan - via IGC
1. Stage I - enlarge EMS, elim. cap controls (Spain 1989, UK 1990), enlarge Structural Funds, surveillance of nat'l. fiscal policies.
2. Stage II - establ. rules for fiscal pol., ESCB & common mon. policies.
3. Stage III - lock exchange rates, issue common currency, pool forex reserves.
4. European System of Central Banks: Board of Govs. to set money growth, oversee nat'l. policies

H. Maastricht Treaty
2. Monetarists (FR, IT) wanted quick integration, convergence to follow; Economists (DE, NL) want convergence first. UK agreed Stage I only. Wanted "parallel" or "hard ECU" to compete w/nat'l. curr.
4. Stage II to begin Jan. 1, 1994 except for countries which retain cap controls.
5. European Monetary Institute to administer EMS & prepare for ECB. Establ. Frankfurt Jan. 1, 1994
6. Cohesion Fund to assist poor members to prepare.
7. Conditions for Stage III in 1999:
   a. no deval. in EMS for 2 years.
   b. inflation 3 lowest + 1½%
   c. LT interest rate 3 lowest + 2%
   d. govt. deficit 3% GDP, debt 60% GDP
   e. UK & DK opt-out clauses.

<table>
<thead>
<tr>
<th>Mar. 93</th>
<th>Inflation</th>
<th>LT bond</th>
<th>Deficit/GDP</th>
<th>Debt/GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2.9</td>
<td>7.6</td>
<td>7.0</td>
<td>141.6°</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td></td>
<td>4.3</td>
<td>66.2°</td>
</tr>
<tr>
<td>Germany</td>
<td>4.3°</td>
<td>6.7</td>
<td>4.0</td>
<td>46.2</td>
</tr>
<tr>
<td>Greece</td>
<td></td>
<td></td>
<td>14.8</td>
<td>98.4°</td>
</tr>
<tr>
<td>Spain</td>
<td>4.0°</td>
<td>11.3°</td>
<td>7.2</td>
<td>57.4</td>
</tr>
<tr>
<td>France</td>
<td>2.1</td>
<td>7.4</td>
<td>6.0</td>
<td>57.1</td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
<td>3.2</td>
<td>92.1°</td>
</tr>
<tr>
<td>Italy</td>
<td>4.5°</td>
<td>11.7°</td>
<td>9.7</td>
<td>114.0°</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.4</td>
<td>6.7</td>
<td>4.1</td>
<td>80.6°</td>
</tr>
<tr>
<td>Portugal</td>
<td></td>
<td></td>
<td>8.2</td>
<td>67.6°</td>
</tr>
<tr>
<td>UK</td>
<td>1.8</td>
<td>8.3</td>
<td>8.2</td>
<td>47.3</td>
</tr>
<tr>
<td>lowest 3</td>
<td>2.1</td>
<td>7.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

° violates criteria

I. ECB objectives
1. price stability primary; also sustainable growth, convergence, high employment.
2. Forbidden to "bail out" govts. or to monetize debt.
3. No supervisory role, lender of last resort, or exchange rate management vs. third currencies.

4. Tools
   a. Open market operations
   b. Discount policy
   c. Reserve requirements


K. Issues and Problems
   1. Fiscal rules too rigid & unnecessary, since rising marginal cost of funds should discipline profligate govts.
   2. Loss of exch. rate flexibility rigidifies terms of trade; ex. German unification shock.
   3. Automatic fiscal stabilization inadequate in EU.
   5. Bayoumi & Eichengreen study shocks in EU & US 1960-90:
      a. EC members growth & inflation correl. 0.58 w/DE.
      b. US regions y & correl 0.68 w/mid-East region.
      c. Decompose demand shocks & supply shocks, permanent & temporary:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Type of shock</th>
<th>EC/Ger.</th>
<th>US/East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation</td>
<td>Permanent</td>
<td>0.33</td>
<td>0.46</td>
</tr>
<tr>
<td>Size of Shocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temporary</td>
<td>0.18</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Permanent</td>
<td>2.1</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Temporary</td>
<td>1.7</td>
<td>2.1*</td>
</tr>
</tbody>
</table>

* due to specialization in US
d. Because EC permanent shocks are larger & more asymmetric than US, lack of exch. rate adjust. is worse.

L. Grand Bargain of Maastricht: France wants EMU to be liberated from the Bundesbank. Germany wanted EPU to allow reunification. Reunification came first, jeopardizing EMU.

M. Ratification of Maastricht Treaty
   1. Rejected by 51% of Danes, June 1992
   2. Ratified by 51% of French, September 1992
   4. DK allowed to opt out of EMU, defense, citizenship, coop in justice % domestic affairs. Final ratification by DK in August 1993.

N. "Growth and Stability" Pact - 1997
   1. Target Budget Balance, to allow deficits in recessions
   2. Convergence Programs required, with monitoring
3. Excess Deficit > 3% of GDP only if "unusual event" or "serious downturn" (-2% of GDP or "further supporting evidence")
4. Action Plan to remove deficit required
5. Sanctions after 10 months of non-compliance, sooner if deliberate
6. Non-interest-bearing deposit [0.2% of GDP + 10% of excess deficit, up to 0.5% of GDP], converts to fine after 2 years of non-compliance

O. ERM II - for "Outs" or "Pre-Ins"
1. Central Rates with wide bands
2. Non-participants have no vote
3. Intervention w/o limit at margins, unlimited ST credit
4. Timely changes in central rates to avoid misalignments