1. a) \( \bar{Y} = \left( \frac{2.001}{1.611} \right)^{1/6} - 1 = 3.68 \) percent per year.

b) Labor productivity \( \theta = \frac{Y}{L} = \frac{1,798 \times 10^3 \text{ Pans}}{112,058 \text{ hours}} = 16.04 \text{ Pans per hour} \)

Capital productivity \( \phi = \frac{Y}{K} = \frac{1,798 \times 10^3 \text{ Pans}}{5,094 \times 10^3 \text{ Pans}} = 0.3530 \text{ Pans of output per Pan of capital} \)

Total-factor productivity \( A = \frac{Y}{L^\alpha K^{1-\alpha}} = \frac{1,798 \times 10^3 \text{ Pans}}{(112,058 \text{ hours})^{0.70}(5,094 \times 10^3 \text{ Pans})^{0.30}} = 5.11 \)

c) Real wage: \( \frac{w}{p} = \alpha \theta = 0.7 \times 16.04 = 11.23 \text{ Pans per hour} \)

Real rental: \( \frac{v}{p} = (1 - \alpha) \phi = 0.3 \times 0.3530 = 0.1059 \text{ Pans per Pan of capital} \)

d) 

(i) \( \frac{w}{p} + \alpha \theta = \alpha \frac{A(1.02 \times L)^\alpha K^{1-\alpha}}{1.02 \times L} \)

\( = 0.70 \frac{5.11(1.02 \times 112,058 \text{ hours})^{0.70}(5,094 \times 10^3 \text{ Pans})^{0.30}}{1.02 \times 112,058 \text{ hours}} = 11.17 \text{ Pans per hour} \)

Fall of 0.06 Pans per hour

(ii) \( \frac{v}{p} + (1 - \alpha) \phi = (1 - \alpha) \frac{A(1.02 \times L)^\alpha K^{1-\alpha}}{K} \)

\( = 0.30 \frac{5.11(1.02 \times 112,058 \text{ hours})^{0.70}(5,094 \times 10^3 \text{ Pans})^{0.30}}{5,094 \times 10^3 \text{ Pans}} = 0.1075 \text{ Pans per Pan of capital} \)

Increase of 0.0017 Pans per Pan of capital

(iii) \( Y = A(1.02 \times L)^\alpha K^{1-\alpha} = 5.11(1.02 \times 112,058 \text{ hours})^{0.70}(5,094 \times 10^3 \text{ Pans})^{0.30} \)

\( = 1824 \text{ thousand Pan} \)

Increase of 26 thousand Pan
2. (a) 
   i) Product-Expenditure Identity: \( Y = C + I + G + (X - M) \) or \( Y = C + I + G + NX \)
   ii) Disposable-income Identity: \( YD = Y - (T - TR) = C + S \)
   iii) Sectoral Deficits Identity: \( [G - (T - TR)] + [I - S] + [EX - IM] = 0 \)
   iv) Inflow-Outflow Identity: \( G + I + X = S + (T - TR)] + M \)

(b) (Note: not soluble in the order shown as some earlier answers depend on some later answers.)
   i) \( Y = C + I + G + NX \) = 10,130 + 2,136 + 2,883 – 708 = 14,441
   ii) \( S = YD - C = 12,241 - 10,130 = 2,111 \)
   iii) \( YD = Y + TR - T = 14,441 + 1,857 - 4,057 = 12,241 \)
   iv) \( EX = NX + IM = 2,539 - 708 = 1,831 \)
   v) \( I - S = 2,136 - 2,111 = 25 \)

c) $2000 Y = \left( \frac{p_{2000}^2}{p_{2008}} \right) Y_{2008} = (100/108.5) \times 14,441 = $200013,310

3. a) Laspeyres: \( p_{2008}^L = 100 \); \( p_{2009}^L = 100 \times \frac{20 \times 1.00 + 20 \times 0.75}{20 \times 0.75 + 20 \times 0.50} = 140 \)
   Paasche: \( p_{2008}^P = 100 \); \( p_{2009}^P = 100 \times \frac{30 \times 1.00 + 18 \times 0.75}{30 \times 0.75 + 18 \times 0.50} = 138 \)
   Chain-weighted: \( p_{2008}^C = 100 \); \( p_{2009}^C = \sqrt{p_{2008}^L \times p_{2009}^P} = \sqrt{140 \times 138} = 139 \)

b) Laspeyres:
   Advantages: (1) easy to compute because the base bundle is fixed; (2) does not suffer from quality bias (quality bias occurs if the index calculation ignores that consumers may be substituting from high-quality goods to low-quality goods, e.g., buying hamburger instead of steak when the price of steak increases (relative to hamburgers)).
   Disadvantages: the index allows for substitution bias—overstating the rate of inflation by ignoring that consumers will substitute away from purchasing the goods with the fastest changing prices.

Paasche:
   Advantages: not subject to substitution bias.
   Disadvantages: (1) harder to compute from the shifting current bundle; (2) the index may underestimate the rate of inflation due to quality bias (failing to incorporate the quality loss from switching from steak to hamburger).

Chain-Weighted:
   Advantages: compromises between the Paasche and Laspeyres.
   Disadvantages: more difficult to compute.

c) \( S_{2008} Y_{2008} = 20 \times 0.75 + 20 \times 0.50 = S_{2008} 25.00 \)
   \( S_{2008} Y_{2009} = S_{2009} Y_{2009} \times \frac{p_{2008}^L}{p_{2009}^P} = (30 \times 1.00 + 18 \times 0.75) \times \frac{100}{139} = S_{2009} 31.29 \)
d) $S_{2009}Y_{2008} = S_{2008}Y_{2008} \times \frac{P_{2009}}{P_{2008}} = (20 \times 0.75 + 20 \times 0.50) \times \frac{139}{100} = S_{2009}34.75$

$S_{2009}Y_{2009} = 30 \times 1.00 + 18 \times 0.75 = S_{2009}43.50$

4. a) The Dow-Jones Industrial Average cross 10,000 for the first time since the crash.
   b) The dollar has declined sharply on the foreign exchanges.
   c) Elinor Ostrum and Oliver Williamson.