**Principles of Economics II (Spring 2013)**

**Homework #2 Answers**

**(Lecture 22-24, Due on Mar. 30, 2013, submitted *out of* class\*)**

**\*See the course syllabus for details**

**Note: All textbook problem numbers refer to "Problems and Application" part in corresponding chapter, the 6<sup>th</sup> Chinese/U.S. edition of the textbook.**

**TAs will score Odd-number problems.**

For Chapter 22

1. Textbook, Chapter 22, #4

If insurance companies were not allowed to determine if applicants are HIV-positive, more individuals who are HIV-positive would be able to purchase insurance, but that insurance would be very expensive. Covering these individuals would raise the cost of providing health insurance and the company would have to raise premiums for all. Thus, individuals who are not HIV-positive would be forced to pay more for health insurance and may drop coverage. Insurance companies would be left insuring only those who are ill (including those who are HIV-positive), increasing the adverse selection problem. The number of individuals without health insurance would likely rise as a result.

2. Textbook, Chapter 22, #8

a.   There would be a tie between the three television shows, with 6 votes each.

b.   In a vote between Dexter and Glee, Dexter would win. In a vote between Dexter and House, House would win. Thus, Monica's first choice (House) would win.

c.   No. He will want to vote between Glee and House first, with the winner then competing in a second vote with Dexter. That way, his preferred choice (Dexter) would win.

d.   If Chandler says he prefers Glee over Dexter, Glee will then compete in a vote against House (which it will win). This way, Chandler will not have to watch his least preferred show (House).

3. Textbook, Chapter 22, #10

Note: The Chinese textbook has a very bad translation. Please look at the English version only. You can consider only the outcome of one race.   This is problematic, as Arrow's impossibility theorem rules out the possibility of such a dictatorship.   An alternative would be to use a Borda count. But, this violates the third property listed as the outcome would change if one of the competitors were to drop out.

4. Textbook, Chapter 22, #11

More than likely, the two stands will locate at the center of the beach. Thus, they will always be closest for at least half of the beach goers. This is related to the median voter theorem.

5. Textbook, Chapter 22, #12

a.    An earthquake occurring in California does not increase the probability that another will occur. Thus, nothing that affects the benefits from such insurance has really changed. The individuals are simply putting more emphasis than necessary on the event. However, if it were true that the individuals had no idea of the possible risks until the earthquake occurred, then purchasing the insurance would be a rational thing to do.

b.    People often overestimate the number of times they will go to the gym. They are overconfident in their ability to stick to a long-term goal such as exercising more often. However, given that the pre-payment for the gym membership is a sunk cost, it should not enter into the person's day-to-day decision of going to work out.

For Chapter 23

6.    Textbook, Chapter 23, # 4

a.    Calculating nominal GDP:
2010: ($1 per qt. of milk × 100 qts. milk) + ($2 per qt. of honey × 50 qts. honey) = $200
2011: ($1 per qt. of milk × 200 qts. milk) + ($2 per qt. of honey × 100 qts. honey) = $400
2012: ($2 per qt. of milk × 200 qts. milk) + ($4 per qt. of honey × 100 qts. honey) = $800

    Calculating real GDP (base year 2008):
2010: ($1 per qt. of milk × 100 qts. milk) + ($2 per qt. of honey × 50 qts. honey) = $200
2011: ($1 per qt. of milk × 200 qts. milk) + ($2 per qt. of honey × 100 qts. honey) = $400
2012: ($1 per qt. of milk × 200 qts. milk) + ($2 per qt. of honey × 100 qts. honey) = $400

    Calculating the GDP deflator:
2010: ($200/$200) × 100 = 100
2011: ($400/$400) × 100 = 100
2012: ($800/$400) × 100 = 200

b.    Calculating the percentage change in nominal GDP:
Percentage change in nominal GDP in 2011 = [($400 − $200)/$200] × 100 = 100%.
Percentage change in nominal GDP in 2012 = [($800 − $400)/$400] × 100 = 100%.

    Calculating the percentage change in real GDP:
Percentage change in real GDP in 2011 = [($400 − $200)/$200] × 100 = 100%.
Percentage change in real GDP in 2012 = [($400 − $400)/$400] × 100 = 0%.

    Calculating the percentage change in GDP deflator:
Percentage change in the GDP deflator in 2011 = [(100 − 100)/100] × 100 = 0%.
Percentage change in the GDP deflator in 2012 = [(200 − 100)/100] × 100 = 100%.

Prices did not change from 2010 to 2011. Thus, the percentage change in the GDP deflator is zero. Likewise, output levels did not change from 2011 to 2012. This means that the

percentage change in real GDP is zero.

c.    Economic well-being rose more in 2010 than in 2011, since real GDP rose in 2011 but not in 2012. In 2011, real GDP rose but prices did not. In 2012, real GDP did not rise but prices did.

7.   Textbook, Chapter 23, # 11
a.   GDP equals the dollar amount Barry collects, which is $400.
b.   NNP = GDP – depreciation = $400 – $50 = $350.
c.   National income = NNP – sales taxes = $350 – $30 = $320.
d.   Personal income = national income – retained earnings = $320 – $100 = $220.
e.   Disposable personal income = personal income – personal income tax = $220 – $70 = $150.

8.   Suppose there are only two firms in an economy: Cowhide, Inc. produces leather and sells it to Couches, Inc., which produces and sells leather furniture. With each $1,000 of leather that it buys from Cowhide, Inc., Couches, Inc. produces a couch and sells it for $2,000. Neither firm had any inventory at the beginning of 2006. During that year, Cowhide produced enough leather for 20 couches. Couches, Inc. bought 80% of that leather for $16,000 and promised to buy the remaining 20% for $4,000 in 2007. Couches, Inc. produced 16 couches during 2006 and sold each one during that year for $2,000. What was the economy's GDP for the year?
a.   $32,000
**b.   $36,000**
c.   $40,000
d.   $52,000

## 9.  支出法 GDP 的计算
　　找到《中国统计年鉴（2012）》（注：虽然这不是最新一期出版的年鉴，但是是从国家统计局网站上可以找到的最新年鉴，网址：http://www.stats.gov.cn/tjsj/ndsj/2012/indexch.htm）。回答下列问题：
（1）　教材中对 GDP 构成的划分在我国被称为支出法 GDP。在年鉴中找出最近一年的支出法 GDP。它是根据什么价格计算的？反映的是名义值还是实际值？
《中国统计年鉴》（2012）表 2－17。当年价格，名义值。
（2）　在年鉴中最近两年的支出法 GDP 中，消费（C）、投资（I）和净出口（NX）占 GDP 的比例各是多少？消费和投资占 GDP 的比例在两年之间的变化率（不是变化的百分数）各是多少？
2010 年：消费 48.2%，投资 48.1%，净出口=1-48.2%-48.1%=3.7%。
2011 年：消费 49.1%，投资 48.3%，净出口 2.6%.
变化率：消费 1.9%=(49.1-48.2)/48.2，投资 0.4%。
（3）　年鉴给出的最近两年之间 GDP 的增长率是多少？（提示：支出法 GDP 中并未列出其增长率，但可以从年鉴中其他方法计算的 GDP 中找到其增长率。）
2010-2011 年，9.6%（表2-4）。
（4）　你能否近似估计出消费、投资在最近两年间的增长率？说明你的计算过程。（提示：

考虑通过第（2）问中得出的比例变化率、第（3）问中得出的 GDP 增长率来进行估算。）

使用近似公式：消费增长率 ＝ 消费占 GDP 比例变化率＋GDP 增长率。（投资类似）

（推导如下：$\Delta C/C = C2/C1-1 = (C2/GDP2)*GDP1*(GDP2/GDP1)/C1-1$

$\qquad\qquad = [(C2/GDP2)/(C1/GDP1)]*(GDP2/GDP1)-1$

$\qquad\qquad = [1+\%(C/GDP)]*(1+\%GDP)-1 \approx \%(C/GDP)+\%GDP$ ）

消费增长率 ＝ 1.9% +9.6% = 11.5%；投资增长率 ＝ 0.4% +9.6% = 10.0%。

（5） 政策制定者经常会关心在 GDP 整体增长的百分数当中，各构成部分的增长所对应的部分，即各构成部分对于 GDP 增长的贡献百分数（contribution in percentage points）。其中，消费对 GDP 增长贡献百分数的计算公式如下：

消费对经济增长的贡献百分数 $_t$ ＝ 消费增长百分数 $_t$ × 消费在 GDP 中所占的份额 $_{t-1}$

类 似 计 算 投 资 对 增 长 的 贡 献 率 。 解 释 这 一 计 算 公 式 。（ 提 示 ： $\Delta GDP/GDP$ = $(\Delta C+\Delta I+\Delta NX)/GDP$。）

GDP 增长率为：

$\Delta GDP/GDP = (\Delta C+\Delta I+\Delta NX)/GDP= (\Delta C/C)*(C/GDP)+ (\Delta I/I)*(I/GDP)+ (\Delta NX/NX)*(NX/GDP)$

可见消费贡献百分数为：$(\Delta C/C)*(C/GDP)$

（6） 计算消费、投资和净出口各自对中国最近两年间 GDP 增长的贡献百分数。消费、投资和净出口中，哪个在 GDP 的构成中所占比例最大？哪个在 GDP 增长中所贡献的百分数最大？为什么说扩大消费是经济增长的"关键"？

消费：11.5*49.1% = 5.6；

投资：10.0*48.3% = 4.8；

净出口：9.6-5.6-4.8 = -0.8。

消费在 GDP 构成中所占比例大；消费对 GDP 增长贡献百分数更大。

给定消费所占 GDP 的比例高于投资，同样速度的消费增长比投资增长对 GDP 增长贡献可以更大。正是在这个意义上，扩大消费（提高消费增长率）是经济增长的关键。（另一个可能的解释是：基于中国已经较高的投资率，进一步投资的边际收益递减，对于长期经济增长的推动作用减弱。）

For Chapter 24

10. Textbook, Chapter 24, #5

a. The cost of the market basket in 2011 is (1 × $40) + (3 × $10) = $40 + $30 = $70.
   The cost of the market basket in 2012 is (1 × $60) + (3 × $12) = $60 + $36 = $96.

Using 2011 as the base year, we can compute the CPI in each year:
2011: $70/$70 × 100 = 100
2012: $96/$70 × 100 = 137.14

We can use the CPI to compute the inflation rate for 2012:
    (137.14 − 100)/100 × 100% = 37.14%

b. Nominal GDP for 2011 = (10 × $40) + (30 × $10) = $400 + $300 = $700.
   Nominal GDP for 2012 = (12 × $60) + (50 × $12) = $720 + $600 = $1,320.

Real GDP for 2011 = (10 × $40) + (30 × $10) = $400 + $300 = $700.

Real GDP for 2012 = (12 × $40) + (50 × $10) = $480 + $500 = $980.

The GDP deflator for 2011 = (700/700) × 100 = 100.

The GDP deflator for 2012 = (1,320/980) × 100 = 134.69.

The rate of inflation for 2012 = (134.69 − 100)/100 × 100% = 34.69%.

c. No, it is not the same. The rate of inflation calculated by the CPI holds the basket of goods and services constant, while the GDP deflator allows it to change.

11. Textbook, Chapter 24, #7
a. ($2.00 − $0.15)/$0.15 × 100% = 1,233%.
b. ($20.42 − $3.23)/$3.23 × 100% = 532%.
c. In 1970: $0.15/($3.23/60) = 2.8 minutes. In 2009: $2.00/($20.42/60) = 5.9 minutes.
d. Workers' purchasing power fell in terms of newspapers.

12. Textbook, Chapter 24, #10
a. When inflation is higher than was expected, the real interest rate is lower than expected. For example, suppose the market equilibrium has an expected real interest rate of 3% and people expect inflation to be 4%, so the nominal interest rate is 7%. If inflation turns out to be 5%, the real interest rate is 7% minus 5% equals 2%, which is less than the 3% that was expected.

b. Because the real interest rate is lower than was expected, the lender loses and the borrower gains. The borrower is repaying the loan with dollars that are worth less than was expected.

c. Homeowners in the 1970s who had fixed-rate mortgages from the 1960s benefited from the unexpected inflation, while the banks that made the mortgage loans were harmed.

### 13. 消费物价指数、GDP 平减指数与替代偏差

某国一个典型的消费者每年都会购买一件内衣。有两种内衣：白棉内衣和彩棉内衣，如果价格相等，消费者会认为彩棉内衣和白棉内衣没有任何差别。假定他每年只购买 1 件内衣。在 2005 年，他以价格 100 元购买了一件白棉内衣。此时，彩棉内衣的价格为 200 元。他在其他物品与服务上的花费为 800 元。

此外，该国的经济是一个封闭的"消费"经济。即该国每年的（人均）产出与当年的（人均）消费额相等。

（1） 在 2006 年时，彩棉内衣的价格为 50 元，白棉内衣价格不变。典型的消费者还会继续购买白棉内衣吗？

不会。

（2） 假定消费者在其他物品上的消费数量不变，其他物品价格也不变。以 2005 年为基年，2006 年的消费物价指数（CPI）为多少？以此衡量的通货膨胀率为多少？

2005 年生活费用为 100+800=900 元。固定篮子（即假定消费者仍然购买白棉内衣），2006 年的生活费用仍为 900 元。因此，2006 年的 CPI 指数为 900/900*100=100，与基年（2005 年）相同。

通货膨胀率：(100-100)/100*100%=0%。

（3） 以 2005 年为基年，2006 年的 GDP 平减指数为多少？以此衡量的通货膨胀率为多少？

2006 年 GDP 平减指数= (50+800)/(200+800)*100 = 85。

通货膨胀率：(85-100)/100*100% = -15%。

（GDP 平减指数 = 名义 GDP/实际 GDP*100

= 以当年价格衡量的人均消费额/以基年价格衡量的人均消费额*100）

（4） 为使得该国典型消费者保持不变的生活水平，2006 年的生活费用应该是多少？由此你认为以 2005 年为基年的"理想"的生活费用指数为多少？以此衡量的通货膨胀率为多少？

在 2006 年消费者选择购买彩棉内衣，生活水平即保持不变，生活费用为：50+800 = 850。

理想的生活费用指数为：850/900*100=94.4。通货膨胀率：(94.4-100)/100*100 = -5.6%。

（5） 消费者通过选择更为便宜的物品替代过去更为昂贵的物品，由此带来的物价水平与通货膨胀率的衡量偏差称为"替代偏差"。替代偏差使得 CPI 高估还是低估了通货膨胀率？使得 GDP 平减指数高估还是低估了通货膨胀率？并解释之。

使得 CPI 高估了通货膨胀率，因为它"强迫"今天的消费者购买相对昂贵的物品，从而高估了今天的生活费用。

使得 GDP 平减指数低估了通货膨胀率，因为它"强迫"过去的消费者购买相对昂贵的物品，从而高估了过去的生活费用。