**International Finance, Fall 2023**

**Final Examination**

**INSTRUCTIONS**

* READ THE INSTRUCTIONS CAREFULLY!
* CLOSED BOOKS, NO NOTES
* Write your name on the exam. If you use more than one sheet of paper, write your name on each sheet and numerate them.
* Write legibly.
* **Don’t write too much.** Brief and complete answers will receive a higher score than long answers which include the right elements but have also plenty of things that have nothing to do with the question being asked. When you answer a question, just answer the question; don’t narrate the history of the universe. Most questions can be answered with a couple of sentences.
* Your grade will be your total score divided by 5.5

1. Consider an economy with wage rigidity and a fixed exchange rate like the one studied in Chapter 10 of the textbook. (3 points for each sub question)
   1. Under which conditions would capital controls be useful for this economy? Explain the economic mechanism (a simple graph might help). How should capital controls be implemented?
   2. Now assume that wages and prices are fully flexible, would capital controls still help? Would they make things worse? If so why. If not why not.
   3. What are the main differences in terms of welfare between imposing capital controls and adopting an optimal exchange rate policy?
   4. What about the difference between adopting an optimal exchange rate policy and a wage subsidy?
2. Consider a model in which a country receives an endowment with and iid (2 points for each sub question, you can answer the first 5 points with a simple graph/equation)
   1. What is the country’s consumption path under the assumptions that the country can issue state contingent debt and can commit to repay?
   2. What is the country’s consumption path under the assumptions that the country can issue state contingent debt and cannot commit to repay and suffers no consequence if it defaults?
   3. What is the country’s consumption path under the assumptions that the country can issue state contingent debt and cannot commit to repay but loses part of its output if it defaults?
   4. What is the country’s consumption path under the assumptions that the country can issue state contingent debt and cannot commit to repay and loses market access forever if it defaults?
   5. What is the country’s consumption path under the assumptions that the country cannot issue state contingent debt and cannot commit to repay and loses market access if it defaults? (use the assumptions and prediction of the quantitative model discussed in class to answer this question)
   6. What is the main factor driving the difference between your answers to points (c) and (d)?
3. One of the key feature of business cycles in both emerging and advanced economies is that the trade balance and the current account are countercyclical.
   1. The first model that we studied in class finds procyclicality in the current account and trade balance. Provide an economic interpretation for this result. (3 points)
   2. Briefly describe three possible strategies for building models that produce countercyclical trade and current account balances. What role do consumption and investment play in driving countercyclicality in these three strategies? (9 points)

**问题 a: 为什么第一个模型预测经常账户和贸易余额的顺周期性？**

**模型背景**

在课堂中学习的第一个模型通常是一个**小型开放经济的内生储蓄模型**，例如“无资本积累的禀赋经济模型”（Endowment Economy）。该模型的核心特征如下：

1. 产出 y\_t 是外生的，通常假设为一个随机过程。
2. 消费 c\_t 和储蓄（通过经常账户表现）是内生决定的。
3. 消费者基于永久收入平滑假说（Permanent Income Hypothesis）做出消费决策，即他们试图平滑当前和未来消费。

**模型预测顺周期性经常账户和贸易余额的原因**

1. **永久收入平滑导致消费变化小于收入变化**：
   * 当经济经历正产出冲击时（例如 y\_t 上升），消费者会部分地增加消费，但他们会储蓄一部分增加的收入以平滑未来消费。
   * 储蓄增加直接反映在经常账户和贸易余额的改善上。
2. **贸易余额的顺周期性**：
   * 贸易余额定义为： TB\_t = y\_t - c\_t.
   * 正产出冲击导致 y\_t 增加，但消费 c\_t 的变化较小，因此TB\_t 会增加，表现为顺周期性。
3. **经常账户的顺周期性**：
   * 经常账户不仅包括贸易余额，还考虑到利息支付和资本账户流动。
   * 但在这个模型中，贸易余额是主要决定因素，因此经常账户通常与贸易余额同步。

**经济学直觉**

* \*\*禀赋经济的核心机制：\*\*模型中没有资本积累，经济完全依赖外生产出 y\_t。当 y\_t 增加时，消费和储蓄都受到正向影响。
* \*\*储蓄驱动的经常账户改善：\*\*正的产出冲击增加了储蓄，从而通过经常账户表现出来。
* \*\*顺周期性：\*\*由于收入冲击直接决定了储蓄的增加，导致经常账户和贸易余额与产出同步。

**问题 b: 如何构建能产生反周期性贸易余额和经常账户的模型？**

以下是三种策略以及消费和投资在其中的角色：

**1. 引入资本积累模型**

**策略描述：**

* 在开放经济模型中加入资本积累，使得经济可以通过投资对生产率冲击作出反应。
* 投资 I\_t 在模型中变为内生变量，其动态会显著影响贸易余额和经常账户。

**机制分析：**

1. 当生产率 A\_t 提高时，资本的边际生产率 F'(k\_t) 上升，激励经济体增加投资 I\_t。
2. 投资的增加会导致总需求（消费 + 投资）大于当期产出，导致贸易余额恶化。
3. 随着资本积累完成，未来的资本存量提高，投资减少，贸易余额逐渐改善。

**消费与投资的角色：**

* **投资**是反周期性的核心驱动力：在正产出冲击下，投资的大幅增加推动贸易余额恶化。
* **消费**较为平滑，根据永久收入平滑假说，对反周期性的贡献较小。

**2. 加入持久性生产率冲击**

**策略描述：**

* 假设生产率冲击是持久性的（如AR(1)过程），即当前的生产率水平会影响未来。
* 这种持久性改变了当前储蓄和投资决策的动态。

**机制分析：**

1. 持久性冲击提高了未来的收入预期，从而增加了当前消费（提前消费效应）。
2. 提高的消费需求可能超过产出增长，导致贸易余额恶化。
3. 持久性冲击还会激励企业通过投资增加资本存量，进一步推高总需求，恶化贸易余额。

**消费与投资的角色：**

* **消费**：由于永久收入预期的提高，消费变得更加灵活，推动当前需求增加，导致反周期性。
* **投资**：投资响应持久性冲击，与消费共同作用，导致总需求超过当期产出。

**3. 引入借贷约束或融资摩擦**

**策略描述：**

* 假设经济体面临外部借贷约束，借贷成本随债务水平上升。这种融资摩擦导致经常账户和贸易余额的反周期性。

**机制分析：**

1. 当经济遭受负产出冲击时，借贷成本上升，限制了经济体通过借贷平滑消费的能力。
2. 消费者被迫削减消费需求，导致进口减少，从而改善贸易余额。
3. 相反，正的产出冲击时，借贷需求减少，进口增加，贸易余额恶化。

**消费与投资的角色：**

* **消费**：融资摩擦下，消费的反应更剧烈，是反周期性的主要来源。
* **投资**：投资的反应较小，但资本积累受限可能进一步放大融资约束的影响。

**总结：三种策略的核心机制与作用**

| **策略** | **核心机制** | **消费的作用** | **投资的作用** |
| --- | --- | --- | --- |
| **资本积累模型** | 投资需求对生产率冲击的反应导致总需求超过产出 | 较为平滑，主要作用在消费需求的调整 | 投资是主要驱动力，导致贸易余额恶化 |
| **持久性生产率冲击** | 提高未来收入预期，推动当前消费和投资需求增加 | 消费需求增加是关键，推动需求大于产出 | 投资与消费共同作用，推动反周期性 |
| **借贷约束或融资摩擦** | 借贷约束削弱消费需求，负冲击时进口减少，改善贸易余额 | 消费是反周期性的核心来源 | 投资受融资约束的影响较小 |

通过引入资本积累、持久性冲击或融资摩擦，可以将模型从顺周期性调整为反周期性。这些机制突出显示了消费和投资在开放经济模型中推动动态平衡的重要作用。