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Solutions to written exam for the B.Sc. or the M.Sc. in Economics
The Economics of the European Union

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Number of questions: This exam consists of 3 questions.

1. **Which of the following statements are correct? Remember to provide a brief explanation.**

   This question relates to the following learning objectives. Knowledge: Explain and describe the main political and institutional characteristics of EU and the European Monetary Union; understand and explain theoretical and applied issues of the process of Economic and Monetary Union in the EU; and explain the role and institutional characteristics of the common monetary policy and of the national fiscal policies in the European Monetary Union. Skills: Be able to apply relevant macroeconomic models to the analysis of European integration and monetary union; and be able to apply the theory of optimum currency area and apply this theory to the analysis of the European Monetary Union.

   (a) If the nominal exchange rate appreciates by more than the inflation differential, then the real exchange rate is depreciating.

   False! The real exchange rate appreciates. Using the notation from the textbook, the change in the real exchange rate is equal to the change in the nominal exchange rate plus domestic inflation and minus foreign inflation. If the change in the nominal exchange rate exceeds the inflation differential, the real exchange rate increases (appreciates) if the exchange rate is defined as foreign currency units per unit domestic currency.

   (b) The Fisher principle states that the interest rate differential must be equal to the expected exchange rate depreciation.

   False! The Fisher principle is the definition of real interest rates. UIP states that the interest rate differential should be equal to the expected exchange rate depreciation.

   (c) McKinnon suggests that the degree of product diversification determines whether two countries are optimal candidates for monetary union.

False! The argument that the degree of product diversification is key was suggested by Peter Kenen. McKinnon focused on the degree of openness, countries that are open to trade and trade heavily with each other are good candidates for an optimum currency area.

(d) All EU member states must, eventually, adopt the euro.

False! Denmark and the UK both have opt-out clauses allowing these countries to remain outside the eurozone. All other countries must eventually join EMU.

(e) Inflation rates across EMU member states must be the same since these countries have adopted a common currency.

False! There may be several different explanations to persistent inflation differentials. The Balassa-Samuelson hypothesis states that the relative productivity growth of tradables and non-tradables determines the real exchange rate. Different inflation rates under the assumption of fixed exchange rates can still exist if productivity growth is different.

2. **Fiscal Policy in a monetary union**

This question relates to the following learning objectives: Knowledge; explain and describe the main political and institutional characteristics of EU and the European Monetary Union; understand and explain theoretical and applied issues of the process of Economic and Monetary Union in the EU; and explain the role and institutional characteristics of the common monetary policy and of the national fiscal policies in the European Monetary Union. Skills; be able to apply relevant macroeconomic models to the analysis of European integration and monetary union.

The question focuses on issues related to fiscal policy in EU and EMU.

(a) What is the role of fiscal policy in a monetary union? Distinguish between automatic stabilizers and discretionary fiscal policy.

First of all, there is a distinct difference between EU countries that have adopted the euro or participating in ERM II and the other remaining EU member states. Fiscal policy is the only remaining macroeconomic instrument available at the national level for the first group of countries (common monetary policy in the eurozone and fixed exchange rate for ERM II member states). Both fiscal and monetary policy are available at a national level for all other EU countries. There is no common fiscal policy in EU or EMU.

The main problems of fiscal policy are that the effectiveness depends on private expectations (whether or not agents are Ricardian and how agents form expectations about future disposable income or wealth) and that there are substantial inside lags (it takes time to implement fiscal policy).

There is a crucial difference between on the one hand automatic stabilizers and on the other discretionary fiscal policy. Automatic stabilizers (tax revenue and welfare spending) automatically stabilizes the economy. Tax revenues decline (rise) during economic slow downs while welfare expenditures (decline) rise. There are no decision lags since the responses are automatic. This leads to a countercyclical national fiscal policy and as a rule of thumb, if the deficit worsens by 0.5% of GDP then GDP growth declines by 1%.

Discretionary fiscal policy is a a voluntary decision to change tax rates or government spending.

It is difficult to distinguish between these two forms of fiscal policy. The budget deficit cannot reveal whether governments actively use discretionary fiscal policy since automatic stabilizers always work. On the other hand, the cyclically adjusted budget shows what the balance would be if the output gap is zero in a given year. This implies that the difference between actual and cyclically adjusted budget is equal to the effects of automatic stabilizers.

(b) Are there any limits on national fiscal policy in EU and EMU?

There are two forms of limits on fiscal policy in EU. All EU countries must abide the rules on budget deficits (the budget deficit as a share of GDP must be below 3%) and the debt rule (government debt as a share of GDP must not exceed 60%). These are called supranational fiscal rules. The other form is any national fiscal rules in place in EU countries. These are designed given national preferences and consist of, in principle, four types of rules; rules on budget deficits, rules on government debt, rules on government expenditures and rules on government revenues. In some countries, these national fiscal rules are combined with fiscal rules on the regional level, for example balanced budget rules for municipalities (Denmark and Sweden).

(c) Why is it often argued that national fiscal policy should be constrained in all countries regardless of membership in a monetary union?

There are a number of different arguments for constraints on fiscal policies, some applies specifically to countries that have adopted a common currency while others applies to all countries.

One main argument for monetary unions is that there are borrowing cost spillovers. One country's deficit would induce higher interest rate for all member states. This may be a relatively weak argument since the eurozone is integrated in world financial markets. If large countries run large deficits, interest rates increase for eurozone. If small countries run large deficits, no effect on euro interest rates but on national interest rates and there is a risk of contagion. At the same time, capital inflows can appreciate common currency and affect competitiveness and excessive deficits combined with the no-bailout clause may lead to default. If that happens,

there will be capital outflows and a weak euro, pressure on other governments and Eurosystem to bail out (in conflict with the no-bailout clause).

There are at least two main arguments for fiscal constraints or rules that apply to all countries. The first is income spillovers. The more coutnries trade, the stronger spillovers. In addition, business cycles will be more synchronized. Empirical evidence suggests that business cycles in core EU are synchronized, while periphery EU is not synchronized.

The second argument is based on the notion that modern democracies seem to exhibit a government deficit bias. The main causes of deficit bias include: (i) Governments' "short-sightedness", governments running excessive deficits in anticipation of being replaced by another political party in future; (ii) Deficit bias may also arise because spending measures tend to be targeted at specific interest groups but financed by general taxation. This creates the potential for free-riding problems emphasized by the common pool explanation for deficit bias; and (iii) time inconsistency may create a problem for governments to commit to fiscal discipline, leading to excessive deficits, as these commitments may not be credible in the face of the incentive to simulate short-run aggregate demand.

Against this background we may also argue that there are serious consequences for countries running excessive deficits and debts. These include an undesirable distortion of consumption over time and among generations, higher interest rates and lower growth, and dramatic fiscal consolidation efforts when government debt problems are ultimately addressed. One solution to all these potential problems is to put restrictions on national fiscal policy.

(d) Why is the Stability and Growth Pact controversial?

The Stability and Growth Pact (Amsterdam 1997) applies to all EU countries and states that member states should avoid excessive budget deficits. The Stability and Growth Pact consists of the following three elements: A political commitment, a preventive arm and a corrective arm. Preventive arm: Preventive elements through regular surveillance aiming at preventing budget deficits exceeding the 3% reference value. All member states must submit stability or convergence programs which are examined by the Council. There is an early warning procedure in the event a significance changes in the budgetary position of a member state. Corrective arm: Dissuasive elements which in the event of the 3% reference value being breached, require member states to take immediate corrective action and, if necessary, allow for the imposition of sanctions.

One argument against the Stability and Growth Pact is that there may not be enough room for a counter-cyclical fiscal policy. The risk is that fiscal policy will be too restrictive leading to higher unemployment and lower growth than otherwise. Moreover, lack of convergence prior to EMU and therefore difficult to abide rules after adoption of the euro. If automatic stabilizers are very strong, then there is

a risk that the budget deficit automatically exceed 3% of GDP leaving no room for an active stabilization policy.

Adding to these arguments is also the apparent failure of the Stability and Growth Pact. The rules have not been effective. The 3 percent reference value has been breached very often (often by more than 50% of the EU countries a given year). Even more breaches of the 60% value. So the conclusion is that SGP has been politically ineffective since a significant number of member states have violated the 3 percent ceiling on budget deficits. There have been no sanctions imposed on countries breaching the reference values. Sanctions have been blocked by large countries whereas small countries typically have voted for sanctions. (A majority must vote in favor of sanctions implying that a coalition of large countries can block decisions. Has changed, reversed qualified majority voting required now.) The conclusion must then be that EU member states view these fiscal rules as too restrictive and have therefore decided not to abide the rules.

In addition to these arguments we can add other shortcomings of the Stability and Growth Pact as outlined in the paper by Larch, van den Noord and Jonung. These include that the Stability and Growth Pact is asymmetric, include warnings, excessive deficit procedures and sanctions but no political rewards; "sticks without carrots". Weak statistical surveillance illustrated by the Greek case, no preventive arm of the Pact in good times, other macroeconomic imbalances are ignored, weak EU enforcement, lacking provisions for mitigation of severe economic stress, lacking provisions for sovereign debt default and that fiscal consolidation and structural reform seen as substitutes rather than complements.

3. **Exchange rate regimes**

This question relates to the same learning objectives as the previous question: Knowledge; explain and describe the main political and institutional characteristics of EU and the European Monetary Union; understand and explain theoretical and applied issues of the process of Economic and Monetary Union in the EU; and explain the role and institutional characteristics of the common monetary policy and of the national fiscal policies in the European Monetary Union. Skills; be able to apply relevant macroeconomic models to the analysis of European integration and monetary union.

(a) Describe and distinguish between at least six different exchange rate regimes.

The textbook defines six different types of regimes.

- Free floating: The exchange rate is freely determined in the foreign exchange market and can freely fluctuate by any amount at any time. Examples include: The euro, US, Australia, Canada, Chile, Norway, Poland, Sweden, the UK.
- Managed floating: The Central Bank tries to influence the value of the currency using interventions. CB buys their own currency when it is too weak

and sell it when the currency is too strong. There is no target. Difficult to distinguish from freely floating. The currency is not floating but cannot be categorized as fixed. Examples: Romania, New Zealand, Iceland, Israel.

- Fixed exchange rates or target zones: Fixed exchange rates implies pegging a currency to another currency or a basket of currencies. Examples are: Fixed vs. the US dollar: Arubam The Bahamas, Bahrain, Barbados and others. Fixed against the euro: Cabo Verde, Comoros, WAEMU and CEMAC. Fixed vs. a composite currency: Fiji, Kuwait, Libya, Morocco and Samoa. In a target zone system the monetary authority defines a target exchange rate and allow the actual exchange rate to fluctuate around this target value. To defend the exchange rate, the monetary authority intervenes on the foreign exchange market. The target can either be announced (together with the range of the zone) or the central bank adopts an implicit target zone. Examples are ERM I and II (Denmark).
- Crawling pegs: Similar to a target zone regime but the monetary authority allows the central parity and the range change regularly over time. Examples include a central parity and a narrow band of fluctuation where both the band and the central parity are adjusted (Bretton Woods 1945-1973). Nicaragua, Lebanon, Trinidad and Tobago, Honduras, Jamaica (vs the US dollar), Croatia, FYR Macedonia (vs. the euro), Botswana, Singapore, Vietnam (vs. a composite currency),
- Currency boards: The central bank uses the foreign exchange reserve as the foundation of the domestic currency. The central bank can only expand the monetary base if they increase the foreign exchange reserve. The domestic monetary base is fully backed by foreign reserve currency and the domestic monetary base is fully convertible into the reserve currency at a fixed exchange rate on demand. Examples: Djibouti, Hong Kong, Bosnia and Herzegovina, Bulgaria, Lithuania, Brunei Darussalam and ECCU: Anguilla, Antigua and Barbuda, Dominica Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines.
- Dollarization/euroization and currency unions: Dollarization implies that there is no separate legal tender. Irrevocably fixed exchange rate where the anchor currency becomes the domestic currency. Examples: dollarization (Ecuador, Panama and El Salvador), euroization (San Marino, Kosovo and Montenegro), Australian dollarization (Kiribati, Nauru, Tavalu). In a currency union several countries adopt the same currency. Examples: EMU (freely floating), the West African Economic and Monetary Union, the Central African Economic and Monetary Union (both conventional peg vs. the euro), Brunei and Singapore. East Caribbean Common Market (Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and Grenadines).

(b) Describe and contrast ERM I and ERM II.

The Exchange Rate Mechanism (ERM I, in force until 1993) was at the core of the system. ERM I was a system with jointly managed fixed and adjustable exchange rates backed by mutual support from all member states, i.e., ERM members were committed jointly to defend bilateral parity if necessary by unlimited interventions and loans, and realignments required consent of all members. The member currencies of the ERM I were fixed against each other within a narrow band of fluctuation ($\pm 2.25\%$) based on a central European Currency Unit (ECU) rate, but floating against non–member countries. If a currency deviated significantly from the central ECU rate, the European Monetary Cooperation Fund and the central banks concerned stepped in to stabilize the currency.

All members of EU joined EMS in 1979 but the UK stayed out of ERM I until October 1990 but left in 1992. As new countries joined EU, they also (in almost all cases) joined EMS and ERM I.

The exchange rates were not fixed permanently, they could be amended if a particular currency diverged structurally from the fluctuation margins. Such realignments required consent of all members.

(c) Why did ERM I break down?

Large inflation differences remained in Europe during the ERM I period starting in 1979. As a result, realignments were frequent (11 realignments between 1979 and 1987, once every ten months on average).

ERM I was in practice abandoned in 1993 as a result of speculative attacks. Italy and the UK left ERM I (September 17, 1992) and the band was widened to $\pm 15\%$ on August 2, 1993 for all currencies except for Germany and the Netherlands who agreed to maintain the narrow band of $\pm 2.25\%$.

The 1992–93 crisis provides an example of the impossible trinity (the impossible trinity principle holds that the following cannot be implemented simultaneously in a country: A fixed exchange rate, monetary policy independence and full capital mobility). The liberalization of financial markets and the fixity of exchange rates was incompatible with divergent monetary policies, especially as Germany, the central country, was going through its unification.

Many of the ERM crises can be traced backed to failed attempts at breaking this "law". However, there is empirical evidence suggesting that most, if not all, realignments can be characterized as attempts to restore international competitiveness.

Single European Act implied that all capital controls were abandoned in 1990 (except for in Spain and Ireland where controls were abandoned in 1992 and Greece and Portugal abandoned controls in 1995). No capital controls together with fixed exchange rates worked even though there were large inflation differentials, real

exchange rates were diverging. Self-validating expectations, market participants believed in stability and therefore no pressure on nominal exchange rates. But, ERM I failed eventually.

Other reasons include the German unification in 1990 and the Danish referendum on the Maastricht Treaty signed in December 1991. When Danish voters voted no, the idea of EMU as it was formulated in the Maastricht Treaty was more or less dead. The result of the referendum was negative news and the foreign exchange market reacted immediately. Speculative attacks initially targeted against the lira and the British Pound and the lack of support from the Bundesbank to intervene in support of these currencies ultimately lead to a situation where Italy and the UK left ERM I.

Speculative attacks now targeted the Irish punt, the Portuguese escudo and the Spanish peseta and spread to the Belgian franc, the Danish krone and the Franch franc. The only possible solution was to abandon ERM I and widen the allowed band of fluctuation (August 2, 1993).

In addition, Eichengreen and Wyplosz suggest four explanations to the ERM crisis; overt or hidden competitive problems, anticipated policy shifts and speculative attacks unrelated to competitive problems. Of these they also point out that the last explanation is key, speculative attacks and the possibility of multiple equilibria.

(d) Is economic performance affected by the exchange rate regime? Summarize the empirical evidence.

Large differences between announced and actual exchange rate systems. Many countries have exhibited a fear of floating; as a result, the actual flexibility of their exchange rate was substantially less than announced. Many countries announced floating but had limited flexibility in reality. Few countries with either freely floating or hard peg (the bipolar extremes), most countries have limited flexibility.

Low growth and high inflation in countries having dual or multiple exchange rates. Results based on de facto regimes comparing averages suggest somewhat lower average inflation for floats, higher for pegs. Higher GDP per capita growth in limited flexibility regimes than in freely floating. Lower volatility of GDP growth in floats, highest for pegs. Real exchange rate volatility higher for floats than for pegs and limited flexibility.

Results based on de facto regimes and conditioning on control variables: Significantly higher inflation in floating (4.5% higher) and in intermediate (1.5% higher) regimes compared to pegs. No significant difference in growth rates in general but when distinguishing between groups of countries, highest growth rates in advanced countries that float. No significant effect for emerging markets and developing countries. Higher volatility of GDP growth in advanced countries that float or have managed floating. Mixed results for emerging markets and no difference for

developing countries.

(e) What factors determine the choice of exchange rate regimes? Discuss the main determinants and give a brief account of the empirical evidence.

The paper by Levy Yeyati, Sturzenegger and Reggio sets out to investigate how governments choose exchange rate regimes, and how the factors underlying the choice of regime have changed over time. It's an empirical study covering a large number of countries (183 countries). They classify countries in three groups, countries with flexible exchange rate regime, countries with an intermediate system and countries with fixed exchange rates. They use a de facto regime classification. They also group a set of variables into: financial factors (variables capturing financial linkages between countries based on impossible trinity), political factors (factors such as years in office, electoral competitiveness, operations risk, government efficiency) and factors determined by OCA criteria (factors determining whether or not a country is a candidate for joining a monetary union)

Results for full sample and for non-industrial countries similar. All approaches significant. For industrial countries, OCA and political factors are important, financial linkages less important. Size is important, small countries choose peg, large float. Openness, open economies tend to choose pegs, closed economies float. Different results for financial variables; capital account openness negative influence on propensity to peg for developed countries but positive for developing countries. Years in office important for non-industrial countries (increasing the probability to peg). Number of veto points important for industrial countries. Results robust to: classification criteria and model assumptions (fixed effects and instrumental variables)