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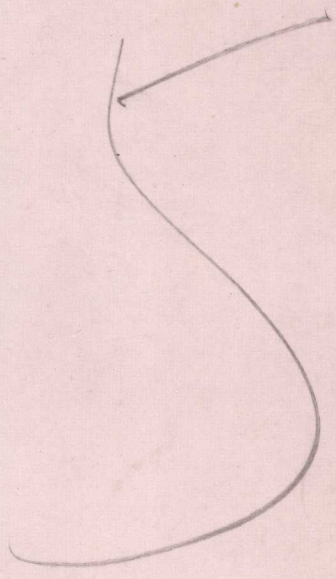
丛书主编 王生洪 秦绍德 金在烈



主编 张 军

理解中国与东亚经济合作

Understanding China and
East Asia Economic Cooperation

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“上海论坛丛书”编委会名单

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上海论坛共识：
亚洲的和谐发展将造福全世界

亚洲经济增长与社会发展对世界具有重要的影响。亚洲各国文化多元，制度各异，人口众多，优势互补，经济繁荣。在新一轮经济全球化浪潮下，亚洲各国正在经历深刻的制度变革、结构重组和经济增长方式转变，新的发展与合作空间日益增大，快速成长的亚洲城市已开始扮演全球网络节点的重要角色，这增强了亚洲和全球的活力。

由于地缘和文化的原因，亚洲各国在历史上保持了长期的互动和协作发展，共同为亚洲和世界文明作出了重要贡献。20 世纪中叶以来，亚洲较为成功地整合了政府与民众的目标，使发展的速度不断加快，表现出不同于世界其他地区的特征。亚洲的崛起由日本率先开始，随后是韩国、新加坡等东亚及部分东南亚国家和地区，创造了“东亚奇迹”。始于 1978 年的中国的改革开放，使这个具有 13 亿人口的发展中大国经历连续 28 年的高速经济增长。与此同时，印度经济也在快速崛起。

亚洲经济社会发展也面临着诸多严峻的挑战：亚洲许多国家和地区承接了全球的制造业转移，形成了以制造业为主的产业结构，导致能源过度消耗和环境恶化；金融领域的不断开放，带来金融风险及其传导效应增加；等等。

过量消耗资源和污染环境的发展模式已难以为继，亚洲国家和地区已经或正在步入资源节约型的发展模式。能源问题关系各国的经济安全和可持续发展，能源安全是国际社会共同面临的难题，所以，能

源合作应该成为亚洲区域合作的重要组成部分。

经济的一体化需要金融市场的一体化。全球金融市场一体化既促进了资源的有效配置,又给世界各国带来了更多的金融风险。亚洲各国、各地区和各金融中心,应以亚洲的共同繁荣和稳定为目标,加强金融合作,增强应对金融风险和促进经济社会稳定的能力。各国政府必须建立一套安全有效的地区汇率协调机制,维持汇率的动态稳定,消除各经济体之间汇率恶性竞争的基础。

中国在世界经济中发挥着越来越重要的作用,中国的汇率制度与货币政策对其周边国家也有着重要的影响。人民币汇率形成机制的改革是中国主动适应国际汇率形成机制的重要举措;人民币汇率的合理调整,体现了中国的大国责任。中国将积极参与和推动东亚金融货币领域的合作,进一步深化金融改革,促进亚洲共同市场的建设。

拥有多元文化的亚洲各国、各民族,共同传承着古老而灿烂的文明。亚洲各国、各民族应该增进跨国家、跨地区、跨民族的文化沟通与交融,经济往来与合作。亚洲曲折的历史还告诉人们,只有和平共处、平等合作、互济互助,才能和谐发展、共同繁荣。

亚洲的和谐发展将造福全世界!

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An East Asian Currency Union?

Xinpeng Xu

1. Introduction

The events in East Asia have been most spectacular, with more than three decades of economic "miracle" (World Bank, 1993) since the 1960s, only to be followed by a devastating financial crisis in 1997. Although a consensus has yet to emerge as to what precipitated the financial crisis, a number of studies have pointed to the important role played by the exchange rate regime. The de facto currency peg to the US dollar for most East Asian economies was deemed a key factor that exacerbated, if not fundamentally caused, the financial crisis. The debate over what is the choice of an optimal exchange rate regime in the aftermath of East Asian financial crisis is still alive, with the polar case argument suggesting either free floating or "hard fix" coexisting well with the argument that no single exchange regime is appropriate for all economies or at all times (Frankel, 1999). To make the debate even more colourful, there is a third dimension concerning what the appropriate domain of an optimal currency area (OCA) is, be it an economy or a group of economies, with the idea dating back to the OCA literature pioneered by Robert Mundell (1961) [see also Wihlborg and Willet (1991), de Grauwe (1992) and Tavlas (1993) for surveys on the

recent advances].

While most of the East Asian economies have managed to sail into the uncharted water of a floating exchange rate regime since the onset of the financial crisis, the experience to date suggests that there are still several questions begging for an answer. First, is a floating exchange regime for each economy a desirable long term choice or a single currency is more an optimal choice for an economy or a group of economies? Barro (2001) and McKinnon (1999) propose a currency union adopting the US dollar as a common currency while Williamson (1999) and Dornbusch and Park (2000) advocate a common-basket exchange rate peg for the East Asian region. Second, given the fact that a group of East Asian economies shares similar production and export structure (Xu and Song, 2000), how can the exchange rate regime avoid "beggar-thy-neighbour" competitive depreciation policies that had been partially observed during the crisis? Tower and Willett (1976) argue succinctly that the potential importance of the exchange rate as a stabilization tool hinges to a great extent on whether the shocks affecting a country are positively correlated with those of its trading partners. If two countries experience symmetric external shocks, a depreciation of a country's currency against the other will not be an effective tool for output and employment stabilization since after experiencing the same external shocks, the other country's currency will have a tendency to depreciate as well. Third, with increasing integration within East Asia through intra-regional trade and investment, the undesirable aspects of a floating exchange rate regime that leads to large volatilities of currencies of trading partners are most apparent, which raises concerns that it may not be beneficial for closer regional economic integration if the desirability of an appropriate currency domain can be a group of economies. [1]

The theory of "optimal currency area" provides a useful vehicle in answering the above-mentioned questions, through the assessment of an

appropriate domain of a currency area. If a country turns out to be an appropriate domain of a currency area, then a floating exchange rate regime for that country may be desirable. On the other hand, if a group of countries constitute an appropriate domain of a currency area, a single currency for the group of countries may be optimal as the group's floating exchange rate against outside domain countries not only serves the purpose of stabilization for all countries in the group but also greatly reduces the costs associated with the maintenance of many currency areas (Mundell, 1961, p.662).

There are certain criteria to be satisfied for a group of countries to form an OCA, however. For example, if labour is mobile across countries, or price and real wage are flexible, the need for an independent currency and monetary policy to achieve output or balance-of-payment stabilization would be greatly discounted. In the case where labour is immobile across countries and real wage is inflexible, as long as two countries experience common symmetric shocks, they'll presumably favour the same policy responses and thus they are good candidates for an OCA. Recent research also finds that the correlations of business cycle shocks are endogenous, in that stronger trade ties may lead to stronger correlations of business cycle disturbances (Frankel and Rose, 1996).

The purpose of this paper is to make an empirical assessment of the feasibility of an optimal currency area for a group or sub-group of East Asian economies, by focusing on the degree of common symmetric business cycle shocks. For that purpose, we have taken the traditional Keynesian assumptions that price and wage are sticky at least in the short run and we have made the assumption that labour is immobile across countries, which cry out for the necessity of a flexible exchange rate as an instrument of stabilization. Together, it amounts to identifying empirically the appropriate domain for an optimal currency area in East

Asia.

We have followed Bayoumi and Eichengreen (1994) (thereafter, BE), in our first step of estimation, by making a distinction between structural disturbances and the economies' responses. Making use of the basic aggregate-demand-aggregate-supply theory, we set up a bivariate structural model to identify structural supply and demand shocks a la Blanchard and Quah (1989). This approach distinguishes us from a number of studies that consider the behavior of output indicator itself, by calculating simple correlation coefficients of output growth across a group of countries. The problem with the approach of a simple correlation coefficient of output, as argued by BE, is that output movements are not the same as shocks and output correlation indicator conflates information on disturbances and responses. [2]

After identifying structural supply and demand shocks, BE and others go on to calculate simple contemporaneous correlation coefficients of the structural disturbances. One major disadvantage with the simple correlation coefficient approach is that the calculation of simple correlation coefficients requires an anchor region (regions), which makes it difficult to assess the degree of symmetry of business cycle disturbances for a group of countries. The pair-wise nature of correlation coefficient does not serve the purpose of measuring commonality of business cycle disturbances among a set of nations.

Our paper departs from BE and others by making a further distinction between common shocks and common symmetric shocks in the second step of our estimation, making use of a statistical technique—a factor model—that serves this purpose well. It is reckoned that there are differences between common shocks and common symmetric shocks. Economies of nations may be buffeted by common shocks, such as oil price shock, but oil price shock may affect different economies in either a symmetric or an asymmetric way, depending on factors like similarity

of production structure and/or resource endowment. An increase in oil price may be a positive disturbance to an oil rich country such as Indonesia, but may turn out to be a negative shock to a resource-scarce country like Japan. This indicates that shocks that are common may not be symmetric and therefore, may not require similar policy responses. A number of existing studies estimate the contribution of common shocks but do not make a distinction between common shocks and common symmetric shocks. For example, a recent paper by Lee, Park and Shin (2002) estimate the extent of common shocks using a dynamic factor model without paying attention to common symmetric or common asymmetric shocks.

Furthermore, studies along the line of simple correlation usually do not provide dynamics of the convergence(divergence) process, which is very important as one region might have little in common in terms of structural shocks with the other in the first few years under study but may have been converging in the last few years, or vice versa.

Our paper first derives structural supply and demand shocks from a structural vectorautoregression model. The setup of a factor model in the second step allows us to decompose the shocks, both supply and demand, into common and idiosyncratic shocks, to gauge the degree of common symmetric shocks, and to examine whether the common symmetric shocks have been more synchronized overtime.

To anticipate the empirical results of this paper, we find significant degree of business cycle synchronization among a group of 10 East Asian economies, including Japan, South Korea, China, Chinese Hong Kong and Taiwan, Singapore, Thailand, Malaysia, Philippines and Indonesia, with a degree of synchronization more or less the same as those of their European counterpart. We find that the dynamics of this synchronization registers a process of converging over time, with the exceptions of that of the Philippines, which displayed divergence of

business cycle shocks with those of the rest of the region. Interestingly, we have observed significant synchronization of structural supply shocks of China with economies in the region, with common symmetric supply shocks accounting for majority of the common supply shocks. Taken together, it implies that East Asia is as well prepared for a regional currency union as the European counterpart, on the basis of the degree of synchronization of business cycle shocks.

Our paper is structured as follows. The next section describes in detail the two steps we use in our empirical estimation, followed by a discussion of data. In Section 3, the econometric results are reported and interpretations are provided. The final section concludes.

2. Methodology and Data

To examine the degree of asymmetry of business cycle disturbances among East Asian economies as well as the dynamics of the symmetry over time, we employ a two-step procedure in our estimation. A structural VAR model is first setup to capture the dynamics of shocks to different economies. We then investigate both the correlation of supply shocks and that of the demand shocks across a set of different economies over time. The setup of a factor model in the second step allows us to decompose the shocks into common symmetric and common asymmetric shocks and to examine whether regional shocks have been converging over time. This section describes the procedure in detail.

Structural VAR to Extract Business Cycle Disturbances

We first investigate the sources and symmetries of disturbances to output and inflation in the regional dimension. Following Blanchard and Quah (1989) and Bayoumi and Eichengreen (1994), we setup a

bivariate structural vector autoregression model (SVAR) based on the standard textbook model of aggregate demand (AD) and aggregate supply (AS).

Consider a bivariate system of output and inflation that has a structural vector moving average (VMA) representation of two orthogonal shocks, supply and demand shocks. Using the lag operator L, the model in matrix form[3] can be written as

$$X_t = \mu + \theta(L)\varepsilon_t, \tag{1}$$

where the matrix polynomials $\theta(L)$ denote the impulse response functions of the structural shocks $\varepsilon_t = (\varepsilon_t^R, \varepsilon_t^N)'$ to the elements of $X = (\Delta y, \Delta \pi)'$, and μ is a vector of constant.

In the bivariate system we study, y_t and π_t denote log of output and inflation respectively, Δy_t and $\Delta \pi_t$ are therefore their rates of change at specified frequency. The structural shocks $\varepsilon_t = (\varepsilon_t^R, \varepsilon_t^N)'$ are assumed to be mean-zero serially uncorrelated with diagonal covariance matrix $D = E(\varepsilon_t \varepsilon_t')$.

To estimate the model defined by equation (1), we first invert equation (1) into a structural vector autoregression representation. Assuming that matrix $\theta(L)$ is nonsingular, we have

$$\Gamma(L)X_t = \Gamma_0 + \varepsilon_t, \tag{2}$$

where the matrix polynomials $\Gamma(L) = \theta(L)^{-1}$, and $\Gamma_0 = \theta(L)^{-1}\mu$ is a vector of constant. The SVAR model of equation (2) can be rewritten as follows

$$BX_t = \Gamma_0 + \Gamma_1 X_{t-1} + \cdots + \Gamma_p X_{t-p} + \varepsilon_t, \tag{3}$$

where B is a 2×2 matrix that describes the contemporaneous relationship between the two endogenous variables.

Direct estimation of the SVAR model is not possible due to the endogeneity of variables in X_t, which is determined by the vector B.

Premultiplication of equation(3) by B^{-1} allows us to obtain the reduced form vector autoregression(VAR):

$$X_t = A_0 + A_1 X_{t-1} + \cdots + A_p X_{t-p} + e_t, \quad (4)$$

where $A_0 = B^{-1}\Gamma_0$, $A_1 = B^{-1}\Gamma_1$, $A_p = B^{-1}\Gamma_p$, and the reduced form errors $e_t = B^{-1}\varepsilon_t$ are linear combinations of the structural errors ε_t with mean zero and covariance matrix $\Omega = B^{-1}DB^{-1\prime}$.

Although the reduced form VAR model of equation(4) can now be estimated, it is still not possible to uniquely derive the structural parameters B, Γ_0, Γ_1, $\cdots$, Γ_p and D, given estimates of A_0, A_1, $\cdots$, A_p, and Ω. There are a total of $4p + 8$ structural parameters with $4p$ in the vector of Γ_1, $\cdots$, Γ_p and 8 in B, Γ_0 and D. However, estimation of the reduced form VAR model of equation(4) yields only $4p + 5$ parameters. Thus, three restrictions are required for identification of the structural parameters. Normalization of the elements of the vector B yields ones on the diagonal and provides another two restrictions. Clearly, at least one restriction on the parameters of the SVAR is required for the identification of all of the structural parameters.

There are broadly two approaches in the literature in imposing an additional restriction in order to recover the structural parameters from estimates of reduced form VAR. The first is to impose ad hoc restrictions such as recursive ordering on the parameters of SVAR. This amounts to impose "short-run" restriction on the SVAR model in that one of the endogenous variables has no short run impact on the other. The resulting estimates of the SVAR model can be sensitive to the choice of the ordering of variables(Enders, 1995).

The second approach is to impose restrictions based on standard economic theory, such as Blanchard and Quah(1989). We follow the second approach in assuming that aggregate demand shocks have no long-run effects on real output, which implies that the coefficient