Foreign Aid and Development in Thailand:

Causality and Political Economy

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ABSTRACT

Recent studies indicate that official development assistance (ODA) or foreign aid (FA) which started more than 50 years ago with a budget of $2.3 trillion has not fulfilled the purpose of assisting development in developing or less developed countries (Easterly, 2006, 2007). The issue is challenging as it questions the politico-economic foundation and success of support from rich and generous donor countries to needy ones as well as the effectiveness of the substantial operations of such international organisations as the World Bank, the IMF and the Asian Development Bank in their efforts to promote global growth and to reduce regional poverty and income inequality. The fragility of these findings based on current methodologies such as 'growth regressions' is however well-known. The paper introduces a new economic and trade policy data-consistency (Kydland (2006) modelling approach with comprehensive macroeconomic interaction (Krueger, 2007) and provides, as an illustrative application, substantive empirical findings on the causal link between ODA and development in an ODA/FA-receiving and major country in focus in Asia, Thailand. Implications for development policy debates and strategic study are also discussed.

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1. INTRODUCTION

Numerous recent studies indicate that the official development assistance (ODA) or foreign aid (FA) program which was launched by US President Harry S Truman more than 50 years ago and with a budget of $2.3 trillion (in today's dollars) has not fulfilled the purpose of assisting development in developing or less developed countries (Easterly, 2006, 2007, and publications cited therein). The finding is challenging with important implications in two aspects: First, it questions the politico-economic foundation and success of support from rich, industrial and generous donor countries to needy ones and, currently in particular, to meet the United Nations Eight Millennium Development Goals (MDG) as adopted by 189 nations and signed by 147 of them in September 2000. Second, it questions the effectiveness of the donor countries' aid programs and of the substantial multilateral operations of such august international organisations as the World Bank (WB), the International Monetary Fund (IMF), and the Asian Development Bank (ADB) in their efforts to promote global development and growth, living standards, and to reduce regional poverty and income inequality (WB, 2007; ADB, 2007).

While the analysis of some of those studies is comprehensive and well researched, it is either chiefly descriptive or, in particular in the case of quantitative investigations, fragile or not robust (Levine and Renelt, 1992; Minier, 2007). It is also at the aggregate level and not sufficiently focused on a specific recipient country which may have specific ODA/FA and development characteristics. More importantly, due to the state-of-the-art of macroeconomics and the 'applied, applied' nature of development economics (Krueger, 2007), a standard or time-tested economic-theoretic foundation of some of these studies may not have been adopted or explicitly stated in the modelling specification. As a result, their conclusions may be argued as insufficiently substantiated to present a credible and realistic view on the ODA/FA effectiveness

issue. As a contribution to the debates and development policy programs and, more significantly, the practical recommendations and implementation by national and international consultants/advisers, project managers, and decision-makers, the paper formally restates the issue of ODA/FA-growth causation and introduces a new and appropriate economic and trade Kydland-data consistency modelling approach to provide substantive empirical findings on the link between ODA/FA and development or growth in developing Asia. The focus in this study is on a major country in the ASEAN, Thailand, which is in its advanced development stages, and is a recipient over the years of sizable ODA/FA grants. In 1999 after the 1997 Asia crisis for example, these grants (net) stood at \$2520.9m or 4.40 per cent of Thailand's GDP (in excess of the World Bank 'needy' benchmark of 1 per cent) in which the major contribution was 3.60 per cent from Japan, 0.80 per cent from multilateral organisations. The annual average of ODA/FA to Thailand is 1.5 per cent of its GDP for the 1986-1999 period.

2. ISSUES IN DEVELOPMENT AND ODA/FA

It has been suggested that development or development economics was not discussed in Adam Smith's treatise on the wealth of nations. It appeared as a separate field of study only after the World War II when the countries under the centuries- or decades-old colonial rule, heavily rural and mostly poor, gained their independence. With the help of the so-called modernising elite – politicians, bureaucrats, and other experts, these countries were assisted in achieving development and growth and improving living standards to a level similar to those in developed or colonist countries. These countries were then heavily industrial, mainly and naturally through industrialisation. With the dominance at the time of the Keynesian revolution over the free-market failures in the arrest and resolution of the Great Depression, governments assumed the role of decision-makers in formulating policies and programs to achieve development and growth for needy countries (Krueger, 2007). This suggestion seems plausible in the context of the early history of ODA/FA but it appears to overlook the fact that, in recent times, development grants

have come from former colonial countries even in Asia. The countries in context include Korea and Japan over the years, Thailand since 2001 and even China since 2002.

Development or, equivalently for our purpose, growth is a difficult field of study, conceptually and in practice. At the conceptual level, there is a large number of competing growth theories, perceived and analysed either through the production or expenditure channel of the United Nations System of National Accounts 1993 (SNA93), investment and innovation (or knowledge) sources, the wages-gross operating surplus components, the industrial relations structure, the labour-school enrolment or gender aspects, or the organisational management behaviour, to name a few. At the practical level where much economic growth research, due to either the lack of a general consensus on a singular growth causation process or the 'applied, applied' nature of growth determination analysis (Krueger, 2007), has been focusing on exploring or finding the factors or actions determining growth (Easterly, 2007) using an arbitrary preferred regression relationship or a set of arbitrary preferred growth relationships. The fragility of this type of economic research – the so-called growth regression approach – has been exposed by Levine and Renelt (1992) who used Leamer (1983) extreme-bound analysis to show that conventional growth regression results are not robust, that is, they are very susceptible to changes in the set of conditioning factors or variables in growth regressions. Second, the actual functional form of the regression equations which is, usually or as a convention, linear in the selected explanatory and independent variables, has also been advanced as a main cause of the fragility of growth regression results (Minier, 2007). Third. exclusion of the effects of structural change, domestic reforms or crises, or regional shocks such as terrorist attacks, SARS, avian flu or tsunamis and the time-varying impact of the Prescott type in growth regression equations has also been suggested as a source of fragility (Durlauf and Johnson, 1995; Tran Van Hoa, 2005).   In this study, a simple, new and effective modelling approach is introduced to empirically study growth and its causal link to ODA/FA in general and in the focus country, Thailand, in particular for development policy purposes. This approach is conceptually based on the basic postulates of the cross-border flows of goods, capital and finances of international economics and trade theory,

and their potential contribution to a country's growth, and avoids to a large extent, the concerns or drawbacks of the growth regressions and other development studies as discussed above. It incorporates, in addition, the Marshallian or Haavelmo simultaneous or circular causality effect among economic factors and activities, and the comprehensive interaction between the production, consumption and exchange processes of these factors and activities as affecting growth (Krueger, 2007). The approach was introduced by Tran Van Hoa (2002c) in the form of a generalised gravity theory (GGT) and has been used successfully econometrically and in the sense of Kydland data-consistency (2006) criterion in a number of studies on empirical trade-growth causality in several contemporary Asian economies (see below).

3. A SIMPLE ODA/FA-GROWTH CAUSAL MODEL FOR DEVELOPMENT POLICY

The development of the GGT model for ODA/FA-growth causal study and development policy and its special features are, as mentioned above, based on the basic postulates of conventional international economics and trade theory and previous successful applications in the sense of Kydland (2006) where prediction-reality compatibility is a crucial credibility criteria. It can be briefly described as follows.

Based on our previous modelling and impact studies (eg, see Tran Van Hoa, 2002a, 2002b, 2002c, 2003, 2004, 2005), we consider, for convenience and without loss of generality, a simple model of two simultaneous (circular causality) implicit or arbitrary functions for income (Y) and trade (T) (extension to more functions is straightforward when more factors or variables are considered and endogenised). This model comprises and extends the basic economic-theoretic postulates linking essentially growth to trade, investment, ODA/FA, economic policy, shocks and reforms. This GGT model incorporates, in one important structural specification aspect, not only economic factors but also geographic or demographic attributes (see Frankel and Romer, 1999; Johansen, 1982) or demographic dynamics (see Kydland, 2006). Thus for simplicity

$$F1 \; (a,Y,T, ODA) \qquad = 0 \qquad\qquad\qquad (1)$$

$$F2 \; (b,T,Y,ODA,X,W) \; = 0 \qquad\qquad\qquad (2)$$

where F1 and F2 are two arbitrary functionals linking income and their theoretically plausible and empirically testable determinants. In this model, Y may be defined as GNP or, by more popular convention, GDP, or income per head of population (Easterly, 2007). Trade may be defined as exports or imports or openness (exports plus imports), and includes FDI. ODA is net ODA/FA grants to a recipient country or countries in focus. X and W denote, respectively, other economic (fiscal, monetary, trade and industry policy – see Sala-i-Martin, 1991) and non-economic (e.g, size, policy reform and external shocks – see Johansen, 1982; Tran Van Hoa, 2005) variables, relevant to a country's growth or development. Importantly for our study, in addition to T, Y and ODA, data for X and W must be available and consistent with published time-series data in a standard Kuznets-type accounting framework (e.g, SNA93), or the accounting system of Stone (1988), or the recent World Bank World Tables.

Taking the total differentials of (1) and (2) with respect to the relevant (continuous) variables, and neglecting the second and higher–order terms in a Taylor's series expansion (see for example Allen, 1960, and Tran Van Hoa, 1992a), the 2-equation model (1)-(2) can be written in stochastic form and in terms of the rates of change (eg, Y%, T%, ODA%, X%) and W of all the included econometrically exogenous and endogenous variables (Y, T, ODA, X and W) as:

$$Y\% = a1 + a2 \; T\% + a3 \; ODA\% + u1 \qquad\qquad\qquad (3)$$

$$T\% = b1 + b2 \; Y\% + b3 \; ODA\% + b4 \; X\% + b5 \; W + u2 \qquad\qquad\qquad (4)$$

In (3)-(4), Y% is growth (the rate of change in GDP) and the equations are linear and interdependent in the sense of Marshall or Haavelmo, a's and b's are the elasticities or impact parameters, and u's other unknown factors outside the model (Frankel and Romer, 1999) or the disturbances with standard statistical properties. In (3)-(4), circular and instantaneous causality in

the sense of Granger (1969) or Engle-Granger (1987) exists or is regarded as a testable hypothesis. In their exact or non-stochastic forms (in which all disturbances are idealistically zero), these equations form the basic structure of the CGE/GTAP models of the Johansen class, in which all elasticities are usually assumed (calibrated) to be given or known *a priori* and the impact of endogenous or endogenised variables (say T) on Y is dependent on the exogenous variables and calculated system-wise using such iterative procedures as the Gauss-Euler algorithm with a known sparse matrix of elasticities.

It can be verified that our so-called flexible (or function-free) ODA/FA-growth equation (3) in the model above is econometrically identified in the sense of mathematical consistency. An impact study of ODA/FA (or endogenous T or exogenous X and W) on growth can be analysed directly via its 2SLS (or reduced-form adjusted) or instrumental-variables (IV) estimation or indirectly via its reduced-form estimation in terms of all the exogenous economic and non-economic variables in the model. It is well-known in the pure theory of econometrics that the use of OLS to estimate equation (3) for example will, in this case, produce biased parameter estimates and subsequent incorrect policy prescriptions.

An important feature of our GGT modelling approach is that, contrary to the CGE/GTAP restrictive (goods only) and so-called *confirmatory* approach (i.e., the causal relations are *a priori* fixed and the values of elasticities are assumed or subjectively given – see also Kydland, 2006, for a requirement of data-based calibration for credible policy analysis), our impact study is historical-data-consistent as all required elasticities are estimated from the model and from available official data and have asymptotically and statistically desirable and consistent properties (an important issue in empirical applications – see Frankel and Romer, 1999) when suitable estimation and forecasting methods (eg, 2SLS or other IV methods) are employed. Another important feature is that, contrary to other SNA93-based or Keynesian system-wide modelling approaches, our impact study has the general flexibility in modelling specification rationale and implementation in assuming explicitly no *a priori* functional forms (eg, linear, log, log-linear) for the equations in the model (for the relevance of this approach in preferred applied modelling, see

Minier, 2007), and it can handle data on trade or budget deficits (having therefore negative values) and real rates of interest when inflation exceeds the nominal interest rate. The usual method of routine log transformations for all variables in a single or multi-equation econometric model cannot do this. It is interesting to note that, from our model's construct, the impact may be regarded as long run in the context of Engel-Granger cointegration or long run causality if all variables in the equations are integrated of degree one.

4. EMPIRICAL IMPLEMENTATION OF THE MODEL AND SUBSTANTIVE FINDINGS

To implement the GGT ODA/FA-growth model [Equations (3)-(4)] within the trade and current account framework above where circular causality exists between Y and T, to empirically investigate the causal relationship between ODA/FA and growth for Thailand and with relevant features since the global stock market crash of the late 1980s and data availability, a plausible complete model can be expanded as

$$Y\% = a1 + a2\ T\% + a3\ ODA\% + a4\ D\% + a5\ SH + e1 \tag{5}$$

$$T\% = p1 + p2\ YT\% + p3\ ODA\% + p4\ FP\% + p5\ MP\% + p6\ INF\% + p7\ XR\%$$
$$+ p8\ IP\% + p9D\% + p10POP\% + p11\ SH + e2 \tag{6}$$

In Equations (5)-(6), Thailand's growth (Y%) is assumed to be or to be tested as being dependent on its ODA (an exogenous variable dependent chiefly on external factors or donor countries' economic conditions and politics) together with trade in goods (T), external debts (D), crises, shocks or policy reform (SH). But this endogenous trade for example is also affected by economic activities and trade-related policies (see Coe and Helpman, 1993) and external or internal shocks in Thailand and its trading partners. Assuming for convenience and for lack of sufficient sampling sizes for the data, that Thailand's trade partners GDP is a proxy for all variables reflecting their own economic activities, policies and shocks, then Equation (6) for T in

its reduced form simply assumes more specifically that Thailand's trade with its partners is affected by the exogenous factors such as its partners' GDP (named YT), ODA effect, fiscal policy (FP), monetary policy (MP), inflation pressure (INF) – see Romer (1993), exchange rates (XR) – see Rose (2000), industry policy (IP) – see Otto et. al. (2002), population (POP) – see Frankel and Romer (1999), external debts (D), and internal or external shocks or policy reform (SH) – see Johansen (1982) and Tran Van Hoa (2005) in Thailand. Equation (6) is in fact a derived demand equation for tradable goods (or even transacted services and investment) reflecting essentially its demand (by its trading partners) and domestic and foreign‑aided supply conditions in Thailand, as postulated in standard microeconomic and international trade theory.

Data – In addition to MP, XR and IP , one new variable, external debts (D), relevant to international economics and finance and growth and has a sufficient sample size, is introduced. Debts in Thailand, like in many other countries in Asia such as Indonesia and Philippines, indicate wholly public borrowings and play a particularly important role in economic management policy in the past 2 decades or so. In Thailand, D peaked at $109.3b or 72.4 per cent of GDP in 1997 (the peak of the Asia crisis), falling to $101.1b and still 93.9 per cent of GDP in 1998, and to $15.8b or 28.6 per cent of GDP in 2005. In our study, all original data are obtained as annual and then transformed to their ratios (when appropriate). The ratio variables include ODA, trade (T) in goods (exports + imports), fiscal policy or government budget (G), debts (D), all divided by GDP. Other non‑ratio variables include M2, population (a gravity factor proxy) and binary variables representing the occurrence of the economic, financial and other major crises, policy shift or reforms over the period 1986 to 2006. All non-binary variables are then converted to their percentage rate of changes. The use of this percentage measurement is a main feature of our policy modelling and impact approach and avoids the problem of *a priori* known functional forms (see above) and also of logarithmic transformations for negative data [eg, budget (fiscal) or current account deficits]. As the required GDP data for Thailand's trading partners as a whole are difficult (if not impossible) to measure and our sampling size is limited, we have focused on a

unidirectional direction of trade and ODA/FA-to-growth below in a 'dual' context, that is, the world's ODA and trade with Thailand and their causal impact on Thailand's growth.

The data for Thailand's GDP, T, net ODA, T, G, D, M2, INF, industry policy (unemployment rate UR) and estimated mean population (POP) are retrieved from ICSEAD's 2006 regional databases. Thailand's openness is defined as T/GDP. All trade and economic data are at current prices in US dollars. In addition to the usual demographic and economic components in our model, we also identified (due to ICSEAD and other data unavailability before 1986) 3 major crises that had affected Thailand during our sampling period, and included them as 3 binary dummy variables with persistent effects after their occurrence (one-off effects were postulated but empirically discarded as implausible in the study). These are the stock market crash of 1987 (C89), the Asia economic and financial crisis of 1997 (C97), and Thailand's major investment, financial and trade liberalisation policy changes and restructuring reforms in the late 1990s and early 2000s (C01). The outbreaks of SARS in 2003, avian or bird flu early in 2004, and the December 2004 tsunami devastation have been omitted due to a lack of sufficient data. Various modelling experiments in our study also show that these crises all have an econometrically permanent or non-decayed effect (reflecting autoregressiveness or non-stationarity) on growth in Thailand.

The Estimated Models - The ODA/FA-growth model for Thailand within the context of the GGT and Thailand's international trade and relations with the world is based on the availability of those data and can be written fully using *mnemonic notation* for estimation and impact analysis as a structural equation (7) for Y% and a reduced-form equation (8) for TY% as:

$$Y\% = \alpha_1 + \alpha_2 TY\% + \alpha_3 ODAY\% + \alpha_4 C89 + \alpha_5 C97 + \alpha_6 C01 + v1 \qquad (7)$$

$$TY\% = \beta_1 + \beta_2 YT\% + \beta_3 ODAY\% + \beta_4 LNY\% + \beta_5 GY\% + \beta_6 IPD\% + \beta_7 POP\%$$
$$+ \beta_8 DY\% + \beta_9 M2\% + \beta_{10} UR\% + \beta_{11} XR\% + \beta_{12} C95 + \beta_{13} C98 + \beta_{14} C01 + v2 \quad (8)$$

where, in percentage change, Y% = Thailand's growth, TY, ODAY, GY and DY are respectively Thailand's total trade or openness, net ODA, government budget, external debts, with all being adjusted for its GDP. YT = GDP from the OECD countries (with major ODA grants to and trade with Thailand) and representing to a large extent Thailand's principal trading countries' income or wealth. The variables M2, UR, IPD and POP denote, respectively, M2, unemployment rate, inflationary pressure and market size in Thailand. The v's are the disturbances representing other unknown factors but with effects on Y% and TY (see Frankel and Romer, 1999 for this rationale).

In deriving equations (5)-(6) and (7)-(8) above, we assume that Thailand's ODA, trade and D affecting its growth are testable hypotheses and this trade itself is essentially a demand equation for either imports from the world and exports from Thailand. The distance and area characteristics of the model are omitted and proxied by population size as all of our variables are expressed in terms of time-series (distance and area may also not be appropriate even for cross-section studies with high-trade and small countries like Singapore and Brunei in ASEAN or ASEAN+3). All variables in the model are expressed as their rates of change so the units of measurement (i.e., $billion or $million, ratios or index numbers) for these variables are irrelevant. SH is a qualitative time-series variable representing internal or external shocks and policy reform having either one-off effects or temporally permanent effects (autoregressive and non-stationary) on trade and growth with discrete values.

The implications of our model above are important for studying the transmission mechanism or relationship between Thailand's ODA and its growth within the conceptual framework of international trade, external debts and recent developments in Thailand and Asia. This relationship, if empirically substantiated, can provide powerful evidence on the relevance of ODA in particular to development and welfare enhancement premises in Thailand and, as a result, it would lend crucial support to the viability, sustainability and promising prospects of ODA to the country at least in the past 20 years or so. It also provides empirical evidence to support further credible and robust development policy to assist Thailand in its trade and economic relations with the global community.

Substantive Findings – Two sets of empirical findings for the ODA/FA-growth model as given in (7) and based on the hypothesis in Equations (1)-(6) above for Thailand as observed over the past 20 years or so and within the framework of international relations and trade theory are given in Table 1. These estimated equations provide data-based information on the causality direction of ODA, together with trade intensity and debts, to Thailand's growth or development. Due to the importance of the estimation methods used that can provide greatly different results and conclusions even for the same model, equations, and data (see further detail in Frankel and Romer, 1999) and also for the purpose of statistical efficiency comparison, two types of estimated structural parameters have been calculated for each equation. These are the OLS, and the 2SLS (an IV estimator). The suitability of the 2SLS over the OLS in the structural equations of our model in finite samples are well-known in the econometric literature.

Table 1: Impact of Net ODA on Thailand's Growth

Generalised Gravity Theory Causality Modelling in Flexible Structural Equations

1986 to 2004

	OLS	OLS	2SLS	2SLS
	Income/Head	GDP	Income/Head	GDP
Variables	Estimated Impact	Estimated Impact	Estimated Impact	Estimated Impact
Constant	0.487	2.120	-1.692	- 0.077
ODA/GDP	0.002^	0.002	0.003*	0.003*
Openness/GDP	0.388**	0.392**	0.523**	0.507**
Debt/GDP	-0.222**	-0.223**	- 0.236**	- 0.237**
Market Crash 87	8.382**	8.167**	10.545**	10.348**
Asia Crisis 97	-13.887**	-14.338**	-15.083**	-15.544**
Reforms 2000s	4.401**	4.353**	5.014**	4.972**
R^2	90.19	90.60	89.39	89.83
F	16.86**	17.66**	15.46**	16.22**
DW	3.18	3.20	3.04	3.05

Sources of data: World Bank (2005) as compiled by Australia's 2005 DX databases, OECD (2007), ICSEAD Economic and Trade Data (2006), and author's own calculations.

Notes: ** significant at the 5% level, * significant at the 10% level , ^ significant at the 15% level.

From the results given in Table 1, we note 5 important findings. First, while having *high success in modelling output growth* (change in GDP or in income per head of population) has been internationally accepted as difficult (see Frankel and Romer, 1999), all 4 estimated structural equations of Thailand's growth contributed by ODA, total trade in goods, external debts, and shocks and reforms are statistically significant (using the F-test) and have a much higher modelling performance (that is, R^2 reaching up to 91 per cent) relative to other trade-growth causality models as reported in previous international studies. As R^2 is an average number for the whole sample size used in estimation, it may not be able to give a detailed period-by-period success of the estimated models. It is important to note that a graph of Thailand's observed and predicted growth fluctuations based on the 4 estimated equations above for the period (1986-2004) under study would give a better measurement of modelling success (see also Kydland, 2006, for this property of good modelling in the sense of 'computational experiments with data-based calibration' for credible policy study). The graphs for these observed growth data and our forecasts have also been plotted (see Charts 1-2). The results indicate that the peaks, troughs and turning points of Thailand's actual growth fluctuations are accurately predicted for almost all of the 19-year period under study. Second, when we look at the dynamic features of the estimated models using either plots or standard econometric diagnostic tests, all estimated equations also appear free from serious first or higher order autocorrelation-induced problems or simple Markov scheme inefficiency.

Third, ODA, as defined by its net value and adjusted for the country's total level of economic activities, has uniformly positive impact on Thailand's growth and, equivalently, its development over the sample period 1986-2004. Interestingly, from an econometric perspective, this impact (for GDP growth) appears to be weak for the equations estimated incorrectly by the OLS, but it is statistically significant (at the 10% critical level) when the correct method of 2SLS is employed. Fourth, the specification of the ODA/FA-growth model within the framework of international economics and trade provides important insights into the roles played by external relations, trade and debts in the economy in the context of increasing globalisation and regional

economic integration. Finally, the introduction of crises, shocks and major policy reforms into the model (which is natural if not imperative for this kind of impact study especially with recent major developments in the Asian region and which other similar impact studies – for example, the CGE/GTAP - are unable to accommodate) provides more credible modelling outcomes and very informative evidence on the characteristics of these crises, shocks, policy reforms, and the roles they have played in or contributed to the economic performance of Thailand in recent years.

5. IMPLICATIONS FOR THAILAND'S DEVELOPMENT POLICY

While the GGT ODA/FA-growth model we used for study above may be simple and illustrative in their structure and limited by data availability, it contains the main and conventional ingredients of international economics, recent advances in economic policy modelling, and on cross-border flows in goods and official finances, their major determinants, and their substantive empirical causal relationships. It is also fairly consistent, for comparative purpose, with similar previous studies of a growth regression kind or other descriptive or quantitative approaches. The empirical findings reported in the preceding section also provide a number of new and interesting insights on the ODA/FA-growth causation nexus and, in a novel way, on the effect of major sudden shocks and gradual policy reform on development for which very limited research has been carried out or reported. Finally, the findings are seen as providing empirical support (or rejection) of recent premises and in debates (see Easterly, 2006, 2007, Sachs, 2006) on the effectiveness of the ODA/FA programs (ADB, 2007; WB, 2007), an important priority of donor countries and international organisations. This claim is credible in the sense that the findings provide important data-based inputs and implications with historical support for informed debates and dialogues on development and co-operation policy between donor countries and Thailand in particular and other least developed and developing economies in Asia in general.

Does ODA/FA Assist in Increasing Thailand's Development?

ODA/FA-to-growth is an important causality topic in development economics that has attracted some of the best minds in applied macroeconomic and policy analysis and modelling and huge resources in the field over the last 50 years or so, and the conclusions have been in the negative in general or not robust (see Levine and Renelt, 1992; Easterly, 2006, 2007; Krueger, 2007; Minier, 2007; see also Sachs, 2006). Our empirical results in Table 1 above show that, in the specific case of Thailand's growth and its ODA/FA receipts and linkage over the past 2 decades, the benefits of ODA/FA to this growth have been positive but small (with an elasticity of about 0.002 per cent) and statistically negligible (significant only at the 15% level) for OLS estimates but stronger (significant at the 10% level) for 2SLS estimates. This small impact is obtained with growth being defined either as the conventional GDP or income per head of population. The impact is in fact smallest among Thailand's other determinants of growth specified in the model. The findings are generally consistent with other less rigorous studies in the field (Easterly, 2006, 2007), and demand serious focus for possible adjustments or changes in development policy of donor countries and perhaps other multilateral organisations to Thailand and perhaps other Asian developing and needy countries in order to improve their ODA/FA effectiveness.

Is ODA/FA Effectiveness Affected by Circular Causality in the Model?

When no simultaneity in the economic activities (for example, between growth and trade) of the model is assumed, the model (7) may be regarded as a growth regression. It is well known in the theory of econometrics that, in this case, the OLS can be used in estimation. The OLS findings above show however that the small effect of ODA/FA on Thailand's growth (through GDP and per head income) is weak in magnitude and statistically insignificant at the conventional critical level. When the assumption of circular causality is allowed however, the OLS estimates are biased and inconsistent, and the appropriate estimation method for (7) is the IV or the 2SLS (which is a subset of IV) or other advanced methodologies (see Tran Van Hoa, 1997). Under the 2SLS, the ODA impact on Thailand's growth is found to be about 50 per cent higher (0.002

versus 0.003), but it is now statistically significant at the 10% level. The finding is interesting in two aspects. First, it provides evidence to demonstrate that the negative (not-significant) effect of ODA/FA (which averaged 0.55 per cent of GDP during 1986-2004) as attained in growth regression studies may very well be the consequence of neglecting the intrinsically interdependent nature among economic activities or transactions of an economy in the sense of Marshall or Haavelmo in economic policy modelling. Second, policies that are based on biased and inconsistent findings or a neglect of circular causality between key economic and trade variables are not credible for use in analysis and implementation.

Does Merchandise Trade Affect Growth?

The trade and growth nexus is an important research topic in international trade and trade policy over 20 years or so and a national preoccupation or priority of over 150 countries (as at 2007) in the WTO and about more than 100 regional trade agreements (RTAs) in the world. The objectives of these countries and RTAs are to promote trade and subsequently growth, living standards, income inequality and poverty reduction (WTO, 2007, ASEAN, 2007). To achieve these objectives or even the trade-only expansion part of them for developing economies, substantial global financial and intellectual resources have been provided by national and multilateral organisations. Evidence on just the WTO-trade and trade-growth nexus has not been clear-cut or even supportive (Frankel and Romer, 1999; Rose, 2004). In the particular case of Thailand, the findings from our study reported above also indicate that the impact of trade on Thailand's growth is positive (with an impact elasticity at about 0.4-0.5 per cent) and highly statistically significant (at the 5% level or even lower) for both GDP and income per head.

Do Domestic Policy Reforms and Regional Crises Affect Thailand's Growth?

Sudden shocks, crises and gradual policy reforms have been recognised as important factors influencing financial and economic activities as suggested by Johansen (1982) for policy modelling many decades ago, or, at the practical level, through the observed damaging effects of the 1997 Asia crisis for example that destroyed 'miracle economies' and created 200m poor

people, the 2004 south-east Asia tsunamis, domestic political turmoil, the avian flu and SARS outbreaks as well as 'good' or 'bad' policy reforms in recent years in Asia, to name a few. In spite of their importance and serious impact, studies of trade, growth and their causal factors with a focus on the effects of these developments, events or actions have not been carried out sufficiently or reported. This is a serious neglect with deep national, regional and global policy consequences. Is there any evidence on this? The specific case-study is the developed and strong economy of Singapore which had had high and sustainable growth since it painfully broke away from the Malaysian union in the 1960s. This economy could not absorb for example the effects of the IT bubbles bust and especially the outbreak of SARS in early 2003. The impact of SARS is: Singapore suffered 2 consecutive quarters of negative growth in 2003, an unheard-of development on the island state.

Our modelling findings in Table 1 show clearly the strong effects of the 3 major structural and policy changes (the 1987 global stock market or Black Friday crash, 1997 Asia crisis, and 2000s reforms) on Thailand's recent growth-path and their causal direction. More specifically, the 1987 crash and Thailand's economic reforms in the early 2000s reveal a positive and statistically significant (at the 5% level) impact of over 8 and 4 per cent respectively. The beneficial effect of the 1987 shocks to Thailand is interesting as Australia, a developed country with a fully open financial market in the region, suffered a great setback as a result of these shocks. It may be argued that Thailand's lower tariffs incentives and export processing zone scheme during this same period may be responsible for this effect. On the other hand, the Asia crisis starting in Thailand on 2 July 1997 which had generated widespread contagion in the region and beyond is characterised by a negative (of more than 13 per cent) outcome. The implications of our findings are that studies of economic performance in Thailand in particular and in the Asian or other regions in general without taking into account sudden domestic, regional and global shocks, or gradual 'good or bad' internal policy reforms commit serious misspecification and are inappropriate and not realistic or credible (see also Frankel and Romer, 1999; Johansen, 1982). Unfortunately, there is currently no coherent literature on the role and impact of structural

change and shocks on trade, economic growth and development in major Asian economies (see however Tran Van Hoa, 2005). From a neo-classical modelling perspective, these role and impact are specially excluded from such currently popular modelling methodologies as the CGE/GTAP for the Johansen-class models.

Impact of External Debts on Thailand's Growth and Development

As mentioned earlier, one of the innovative and novel features of our paper is the introduction of external debts into the GGT ODA/FA-growth models. In many least developed and low-income countries as defined by the World Bank, these debts which may be large in their early stages of development (or even in some developed countries) can be regarded as an important part of the government's economic management policy to promote and sustain growth and development programs and economic stability (WB, 2007). It appears however that, from the results reported in Table 1, the effects of these debts to Thailand which stood at an average of 50.33 per cent of its GDP over the period 1986-2004 are non-beneficial to the country and, in addition, statistically strong. Fortunately for Thailand, the trend of external debts has been declining in the recent years with a peak of 93.92 per cent of GDP in 1998 to 31.70 in 2004.

Do Our Models Emulate Their Observations Well?

This is a question on (a) the accuracy and reliability of the GGT ODA/FA-growth model, and (b) the validity of the instruments (control or conditioning variables) used – in a simultaneous-equation context (a point often raised in the literature, see Frankel and Romer, 1999; Easterly, 2007; Minier, 2007). Significantly, the question (a) is at the heart of economic modelling in the sense of Friedman or of quantitative aggregate economics in the sense of Kydland where the requirement that actual (observed) and modelled (predicted) data should satisfy the nearness (good-fit) criterion for credible or realistic applied modelling and useful practical policy formulation (see Kydland, 2006, for this justification in his Nobel Prize award speech). The concept of data-model consistency or modelling realism also been advocated by Milton Friedman more than 2 decades ago in his various writings.

The answer to (b) in this case has to be relative, as different models will have different instruments (or macroeconomic conditions) and therefore different accuracy or reliability outcomes. As a result however, the plausibility of the adopted economic-theoretic foundation of the model and their characteristics play an important role. To provide answers to the question (a) for our simultaneous-equation models of ODA/FA-growth fluctuations above, we have calculated, using the estimates given in Table 1, the predicted values for Thailand's GDP growth and income per head for the whole period under study, 1987 to 2004. Standard evaluation criteria such as the correlation coefficient, the RMSE, and the Theil-MSE-decomposition Um (bias), Us (variation), and Uc (covariance) where, by definition, Um + Us + Uc = 1 (see Pindyck and Rubinfeld, 1998), are then used to evaluate the performance of our predictions in relation to their observations. The results of the Theil evaluation are given in Table 2.

Table 2

Reliability of ODA/FA-Growth Models in Thailand's Development

Friedman-Kydland Criteria 1986 to 2004

	GDP Growth	Income Per Head
Correlation Coefficient	0.948	0.945
RMSE	1.714	1.685
Mean Error	0.000	0.000
Um	0.000	0.000
Us	0.001	0.001
Uc	0.999	0.999

Notes. Ub+Us+Uc = 1. See Pindyck and Rubinfeld (1998) for further detail on these evaluation criteria. The estimates are based on TSP calculation.

To see whether our findings meet Friedan-Kydland realism criterion, the graphs of Thailand's actual GDP growth and per capita income fluctuations and their 2SLS-based predictions from our ODA/FA-growth models have also been plotted and given in Charts 1-2.

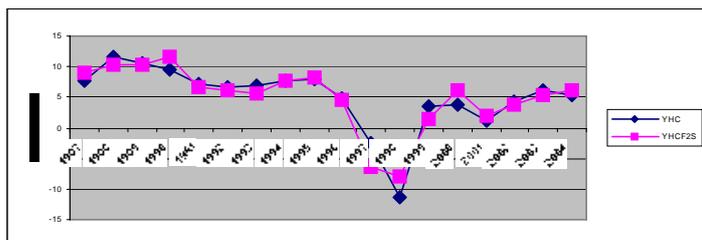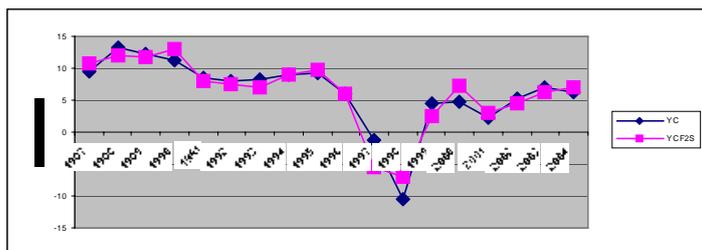Chart 1: GGT-ODA/FA Modelling of Thailand's Per Head GDP Growth

Chart 2: GGT-ODA/FA Modelling of Thailand's GDP Growth

Notes: YHC=Income per head, YHCF2S=Predicted income per head, YC=GDP growth, YCF2S=Predicted GDP growth. All calculations are carried out by TSP.

From these graphs, we first note that, as in the earlier studies using our new modelling flexible (that is, simultaneous-equation and function-free GGT) approach, the predictions very accurately emulate all troughs, peaks and turning points of the actual growth fluctuations. This would meet the performance criteria of Friedman and Kydland as discussed earlier for useful policy modelling. Second, the excellent success here should also be assessed in the context of modelling the rates of changes of major economic variables or activities, a notoriously difficult task according to international researchers in this field. Third, as the predictions seem to be very good estimates of observed data for both GDP growth and income per head, our findings would

enhance the robustness and reliability of our estimation of the impact of ODA to Thailand and, importantly, its contribution to the country's development and growth. This would provide more credible empirical support to related recommendations on Thailand's development and trade policy and economic relations, and its interaction with other economies in the region and beyond.

6. CAUSAL EMPIRICS, EXTERNAL RELATIONS AND POLITICAL ECONOMY IN ASIA

The motivation for an ODA/FA program from the rich and advanced countries to least developed or low-income countries is morally noble, economically important and has politically attracted attention worldwide in the last 50 years or so. Currently in 2005, the ODA/FA amount stood at over $60 billion. It is disappointing that the benefits of these grants have not been found significant or sufficiently robust, according to a large body of recent studies (Easterly, 2006, 2007; Rajan and Subramanian, 2007; Minier, 2007) and by experts who were well experienced in managing or assisting appropriate development policy in international organisations, in assisting development and growth in needy economies. The case is not isolated unfortunately. The evidence on the benefits from other international organisations such as the WTO in liberalising trade and increasing growth worldwide or the IMF in managing financial crises in Asia in its recent troubled times is also not much clearer (see Rose, 2004; Tran Van Hoa, 2002d). Why is this so? What are the reasons? And are there effective remedies based on substantive causal empirics to support plausible development policy for the benefits of both donor, recipient countries and global economy alike?

While Easterly (2007) believes that ODA/FA is a mistake as we do not actually know what actions (the causes), advice or donors/recipients do lead to increasing economic development, Krueger (2007) goes further to suggest that we do not know exactly what economic development is. The non-performance or, in the words of the IMF (2007), the ineffectiveness of ODA/FA grants, has also been attributed to the weaknesses in their development policy in the form of 'missing elements' in the Washington Consensus (adjustment with growth) or the Sachs

(2005) Conventional Wisdom (right investments) and the First Generation (financial structural adjustment) principles. When we take into account Krueger's perspective on development, the matter is not much better. If the nature of development is in its 'applied and applied' characteristics, then more knowledge on this development can be obtained from more formal empirics like growth regressions. However, the surplus of answers (up to 145 causes or explanatory variables) from the New Growth Literature of the 1990s (Durlauf et al, 2005) or from what Rodrik (2006) calls the universe of development policy, destroyed the credibility of this approach (Easterly, 2007). A component of the Second Generation development policy, namely freedom from corruption or a lack of it in ODA/FA-receiving countries, has also been taken up as a cause explaining why there is no evidence on a robust association between aid and growth (Rajan and Subramanian, 2007). Other possible causes for the non-performance of ODA/FA grants include moral hazard in these grants, the appropriate quality of ODA/FA foreign consultants, advisers or project managers in the recipient countries, the mismatch of what the recipient countries want and what the donor countries dictate (Tran Van Hoa, 2002d) through these project managers' orientation and perception, the so-called 'diplomat's dilemma' where recipient countries 'trainees or senior experts' in the ODA/FA projects are reluctant to tell these ODA/FA consultants, advisers or project managers exactly they want to say, and, from a modelling policy perspective, a lack of dynamics and macroeconomic interaction and framework in ODA/FA-growth studies, to name a few. Methodologically, the mathematical form of the growth equations (Minier, 2007) has also been advanced as why this non-robustness or non-performance of the ODA/FA projects has been found.

In the present paper and as discussed in the preceding sections, a number of major economic-theoretic and econometric improvements on the areas above have been introduced into a study of ODA/FA-growth causality for possible development policy analysis. The findings from our study are interesting in a number of aspects, methodologically and for credible development policy analysis. First, when focusing not on countries on average but more appropriately on a specific country with invariably special development characteristics, the benefits of ODA/FA are

weak when the equation is treated as a growth regression. When circular causality and the basic macroeconomic interaction within the framework of international economics are introduced, the benefits are found significant even if the impact magnitude remains similar. This finding seems to support Krueger (2007) in her claim that ODA/FA-receiving countries' decision-makers take into account a host of economic conditions, including their fiscal and financial management, in their development policy. Ignoring these conditions would produce biased findings. Second, while most developing and ODA/FA-receiving countries, including Thailand, focus, as a national development priority, on expansion of exports or trade or openness, this focus produces a positive and strong contribution to Thailand's growth. This contradicts the findings of other studies on the gain from trade liberalisation (or a lack of it) through say a WTO membership (Rose, 2004) and its subsequent contribution to development. A focus on manufacturing production, as some other studies (Rajan and Subramanian, 2007) have suggested, may explain this finding for Thailand. Third, debts or structural adjustment grants appear to have a strong damaging effect on growth. This is due perhaps to a moral hazard problem affecting recipient countries, and supports an earlier experience in the 1990s by international organisations (eg, the WB, IMF and ADB) with loans to finance investment producing unexpected disastrous outcomes (see Easterly, 2007). Fourth, a growth study without taking into account major development shocks, generated regionally or globally, and important policy reforms adopted internally or carried out under international commitments or obligations would be inappropriate in specification and result in implausible if not wasteful development policy with suspect outcomes affecting both donor and ODA/FA-receiving countries alike.

Finally, our findings appears to satisfy remarkably well the Kydland (2006) critical realism requirement that, in this study or other similar studies using CGE/GTAP modelling or a 'computational experiments' data-based calibration approach, 'predicted or modelled' and observed growth fluctuations in the country (or countries) in-focus meet the 'nearness' criteria.

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