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TITLE **A Short-Run Macroeconomic Model for Less Developed and Newly Industrializing Countries based on the Keynesian Aggregate Demand Function**

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ABSTRACT Discussions on macroeconomic systems, their relevance and validity mainly focused on Developed Countries. Survey of development literature, on the other hand, shows there was scanty direct effort to discuss which macroeconomic system or school was relevant for the Less Developed Countries (LDCs) and Newly Industrialising Countries (NICs), similarly, for instance, much of the more recent discussions concerning the implementation of market economy in these countries. Yet we long had three major blocks to build a macroeconomic model for LDCs and NICs. These were: the relevance of Keynesian aggregate demand, the excess labour and scarcity of capital, and the limited substitutability between labor and capital. The latter two gave rise to capital constraint for production and to technological unemployment. In addition, rigidities and non-automaticity of aggregate demand generally gave an inflationary gap and demand inflation alongside technological unemployment. This model is fundamentally Keynesian with special conditions surrounding the production function, supply and demand for labour taken into consideration. Going further, we may also add foreign exchange constraint to the capital constraint. Problems of LDCs and NICs, policy recommendations to achieve prudent financial management, and the more recent attempts to move towards the market economy and globalisation can all be explained within this Keynesian framework.

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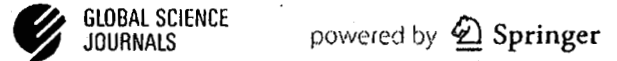
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Table of Contents

Accounting and Finance

- Private Company Accounting Drivers in Asia** 1
Satinder Bhatia, Indian Institute of Foreign Trade, India
- Professional vs. Non-Professional Investors: A Comparative study into the usage of Investment Tools** 7
Gil Cohen, Carmel Academic Center, Israel
- The Usefulness of Different Accounting Earnings Measures: The Case of Egypt** 15
Ahmed F. Elbayoumi, Cairo University, Egypt
Emad A. Awadalla, University of East London, United Kingdom
- Macro and Micro Earnings Manipulation: The Role of Accounting Standard Setting Process** 24
Ahmed F. Elbayoumi, Cairo University, Egypt
Emad A. Awadalla, University of East London, United Kingdom
- The Role of Guanxi in China's Foreign Banks: A Review of the Literature** 33
Adolphus Yee-Yin Wan, Hong Kong Shue Yan University, Hong Kong

Business Strategy & Management

- Leadership Practices of Small and Medium Enterprises in Singapore** 44
Titus Ng, Everyone A Leader, Singapore
- Staffing top management positions in multinational subsidiaries – a local perspective on expatriate management** 50
Małgorzata Rozkwitalska, Gdansk School of Banking, Poland
- The Effects of Organizational Justice on Salespersons' Perceived Ethical Climate, Organizational Commitment and Turnover Intentions** 57
James Deconinck, Julie Johnson, James Busbin, Western Carolina University, United States
- Measurement of Reliability as on-line purchase dimension for retail internet sites amongst engineers** 65
Prof. Rekha Chikhalkar, National Institute of Industrial Engineering, India
- Total Quality Management Enablers for SMEs: A Study of Malaysian Companies** 71
Azizan Abdullah, Zanariah Zainal Abidin, Universiti Teknologi MARA, Malaysia
- Primary Health Care Governance: Case Studies in Argentina and Brazil** 77
Jose Alexandre M Pigatto, Universidade Federal de Santa Maria, Brazil
Maria Cristina Cacciamali, Universidade de São Paulo, Brazil
Marcelino José Jorge, Fundação Oswaldo Cruz, Brazil

Issues related to the conceptual changes and perception difficulties of scarcity <i>Laszlo Csorba, Eszterhazy Karoly Collage Eger, Hungary</i>	85
Measuring the Benefits of Employee Volunteerism in Business-Education Partnerships as a Corporate Social Responsibility Strategy <i>Evelyn Green, Casino, Hospitality and Tourism Management, The University of Southern Mississippi, United States</i> <i>Cyndi Gaudet, Economic and Workforce Development, The University of Southern Mississippi, United States</i> <i>Heather Annulis, Economic and Workforce Development, The University of Southern Mississippi, United States</i>	91
Identifying the Specifics of Motivating Different Groups of Employee <i>Sarka Vranova, Tomas Bata University in Zlin, Czech Republic</i>	98
Formulating Competitive Repertoires– Four Different Types of Competitive Actions <i>Jay Lee, CSU Sacramento, United States</i>	105
 <u>Economics</u>	
Identification and Analyzing Of Effective Factors Elastics on Inflation Function in Iran by Using ARDL Methodology <i>Hamid Reza Izadi, Chabahar Maritime University, Iran, Islamic Republic of</i> <i>Maryam Izadi, Bank of Industry & Mine, Tehran, Iran, Islamic Republic of</i>	110
Theory and Empirical Research on Cultural Consumption in China: Lipstick Effect <i>Ling Qiu, Shanghai University of Engineering Science, China</i>	115
Montenegro's Integration Perspective in a Time of Crisis <i>Gordana Djurovic, Danijela Jacimovic, University of Montenegro, Montenegro</i>	120
The Situation of Competitive Clusters in Some EU States <i>Ioan Constantin Dima, University Valahia of Targoviste, Romania</i> <i>Janusz Grabara, Czestochowa University of Technology, Poland</i> <i>Stefan Vladutescu, University of Craiova, Romania</i>	127
A Short-Run Macroeconomic Model for Less Developed and Newly Industrializing Countries based on the Keynesian Aggregate Demand Function <i>Prof. Dr. Mukerrem Hic, Assist. Prof. Dr. Ozlen Hic Birol, Istanbul University, Turkey</i>	132
An Interpretive Analysis of how Audit Quality is Perceived in Economies in Transition <i>Emad Awadallah, University of East London, United Kingdom</i> <i>Ahmed Elbayoumi, Cairo University, Egypt</i>	145
The CATASTROPHE MAP: PROPERTIES of a PRODUCTION MODEL with UNCERTAINTY <i>Pascal Stiefenhofer, University College London, United Kingdom</i>	152

Entrepreneurship & Innovation

- Guidance and Technology: An Assessment of Project Intervention and Promoted Technologies** 159
Valerien Pede, Justin Mckinley, International Rice Research Institute, Philippines
Raman Sharma, Anurag Kumar, International Rice Research Institute, India

- Applying Visual Frameworks to Optimize Innovation Strategy** 165
David Ross, Georgetown University, United States

- The Innovation Decathlon: Ten Commandments for successful innovation** 174
Dany Jacobs, University of Amsterdam, Netherlands
Hendrik Snijders, ARCCI, Netherlands

- The Development Of Young Entrepreneurs' Global Propensity Index** 180
Zahariah Mohd.Zain, Nuroi'Ain Mustapha, Universiti Teknologi Mara, Malaysia

Environmental Study

- An Empirical Study of Low-carbon Lifestyle** 186
Hui Guan, Luku Sun, Dalian University, China

Hospitality & Tourism

- The pay structure for task performance in the hospitality industry: The role of pay satisfaction** 192
Chia-Dai Yen, National Central University, Taiwan
Tung-Chun Huang, Chien Hsin University of Science and Technology, Taiwan

- Motivations between First-time and Repeat Business Visitors: A Confirmatory Factor Analysis Approach** 199
Chechao Chiang, Cheng Shiu University, Taiwan
Yi-Min Li, National Kaohsiung University of Applied Sciences, Taiwan

- The Factors Impacting on the Management of Global Medical Tourism Service Supply Chain** 206
Anita Medhekar, Central Queensland University, Australia
Mario Ferrer, Alfaisal University, Saudi Arabia

- Development of Spiritual Tourism Circuits: The Case of India** 212
Anita Medhekar, Central Queensland University, Australia
Dr. Farooq Haq, Canadian University of Dubai, UAE

Tourist's understanding of sustainable tourism: An analysis in eight countries 219
Roger Wehrli, Martin Lutzenberger, Jürg Stettler, Hannes Egli, Dieter Pfister, Lucerne University, Switzerland

Market Analysis

INFLUENCE OF QUALITY OF THE GOODS ON SATISFACTIONS OF CONSUMERS 225
Lenar N. Safiullin, Kazan Federal University, Russian Federation

Return & Volatility Disparity, Slow Adjustment Process in Chinese Triple-Listed Firms 233
Lixian Liu, University of Canberra, Australia

The Vertical Integration Strategies Approach for Organizational Risk Reduction 239
Brion Scudder, Framarz Byramjee, Indiana University of Pennsylvania, United States

The Moderating Effect of Switching Barriers: Online Stock and Derivatives Trading 245
Chi Bo Wong, Hong Kong Shue Yan University, Hong Kong
Ka Li Kelly Wong, Institute of Modern Management, Hong Kong

Intellectual Asset Governance

Small Business and Intellectual Asset Governance: An Integrated Analytical Framework 252
Yolanda K. Gibb, Sam Blili, University of Neuchatel, Switzerland

A Short-Run Macroeconomic Model for Less Developed and Newly Industrializing Countries based on the Keynesian Aggregate Demand Function

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Abstract—Discussions on macroeconomic systems, their relevance and validity mainly focused on Developed Countries. Survey of development literature, on the other hand, shows there was scanty direct effort to discuss which macroeconomic system or school was relevant for the Less Developed Countries (LDCs) and Newly Industrializing Countries (NICs). Similarly, for instance, much of the more recent discussions concerning the implementation of market economy in these countries. Yet we long had three major blocks to build a macroeconomic model for LDCs and NICs. These were: the relevance of Keynesian aggregate demand, the excess labor and scarcity of capital, and the limited substitutability between labor and capital. The latter two gave rise to capital constraint for production and to technological unemployment. In addition, rigidities and non-automaticity of aggregate demand generally gave an inflationary gap and demand inflation alongside technological unemployment. This model is fundamentally Keynesian with special conditions surrounding the production function, supply and demand for labor taken into consideration. Going further, we may also add foreign exchange constraint to the capital constraint. Problems of LDCs and NICs, policy recommendations to achieve prudent financial management, and the more recent attempts to move towards the market economy and globalization can all be explained within this Keynesian framework.

I. INTRODUCTION: AN OVERVIEW OF THE DEVELOPMENT LITERATURE

Discussions about macroeconomic systems and schools, their relevance and validity, usefulness of their policy recommendations were mainly focused on Developed Countries (DCs). Very rightly and understandably there were no systematic attempts to investigate their applicability to the Less Developed Countries (LDCs) and Newly Industrializing Countries (NICs). This is true of the discussions about the Classical versus the Keynesian System, Neo-Classical Synthesis, Neo-Classical System versus Neo-Keynesians, Fundamental Keynesians, and more recently about Monetarism, New Classical System, New Keynesian and Post-Keynesian Economics.

Development economists also took little interest in drawing a macroeconomic framework for LDCs and NICs based on the above macro systems and schools. During the period 1950's up to mid 1970's they mostly dealt with the following topics: presence of external economies, hence difficulties of short-term market prices as indicators of long-run productivity [e.g. Rosenstein-Rodan: 1943; Nurkse: 1953; Scitovsky: 1954; Myrdal: 1957], two-sector development models [e.g. Lewis: 1954; Ranis and Fei: 1961], Neo-Malthusian models and the big push [e.g. Leibenstein and Galenson: 1955; Nelson: 1956; Leibenstein:

1956], inclusion of the population parameter as a negative factor - not necessarily Neo-Malthusian - in development [e.g. Singer: 1952; Coale and Hoover: 1958], historical perspectives on development [Kuznetz: 1954], historical development models [Rostow: 1960] and the wisdom of historical development models [Gerchenkron: 1965].

Policy recommendations pointed towards a “wise” implementation of interventionism, planning, protectionism and a relatively large role assigned to the state. The fact is that during this period of early stages of development, the role of the state is indeed larger, both in terms of public investments and interventions to the price mechanism [Hiç: 1982]. But mistaken interpretation of the Soviet economic regime, that it gives a high growth rate may also have played a role in drifting towards excessive public investments, excessive interventionism, and protectionism and closed-development strategy. A big public economic sector also gave both the politicians and the bureaucrats a large power base that was also tempting by itself. These excesses, coupled with financial mismanagement and populism generally led to inflation, balance of payments crises and inability to pay foreign debts. This ushered in IMF, its recommendation of a devaluation and implementation of a stabilization programme in order to close the deficits both in the budget and the current account. The IMF program also entailed more reliance on the private sector, encouragement of foreign private capital (FPC) flow, and attempts at outward-orientation of these countries by preventing over-valued currency practices. But once the crises subsided, the governments slipped back to the former excessive interventionist and protectionist policies, and to over-valued currency practices.

After mid 1970s and 1980s, however, majority public opinion in most LDCs and NICs had come to realize the futility of the above development strategies. Following the advice of IMF and the World Bank, they began to shift towards the market economy. This meant giving priority to the private sector, encouragement of FPC flow, privatization programmes to decrease the share of the public sector in investments and production, dispensing with much of the administrative fiat and subsidies, implementation of free and flexible foreign exchange regime instead of fixed exchange rate, dispensing with excessive protectionism; hence the outward-orientation of the economy. Several notable economists backed this movement towards the market economy, such as Bela Balassa [1982, 1989], Anne O. Krueger [1983], Jagdish N. Bhagwati [1978], as also advocated by the World Bank [1987]. In contrast, a number of notable economists, mostly from Latin America, e.g. Raúl Prebisch [1988] called “structuralists”, disagreed and

advocated continued intensive interventionism and protectionism. But since the majority favored a move towards the market economy, governments began to change their economic regimes and development strategies accordingly. This was true of Latin American countries, India, Turkey, Far Eastern countries, Russia and the Eastern European countries after the collapse of the Soviet System. Even China implemented a mixed economy, encouraged FPC flows and expanded her exports and international trade, also becoming a member of WTO. There were serious political and economic problems encountered on the way to the transition to the market economy [Hiç: 1982]. Relatively more developed countries and NICs, on the whole, fared better than the more backward LDCs, for instance, those in Africa [Mosley: 1991]. Despite the slowdown in economic performance in the more recent years, and economic crises faced in Argentina and Turkey, there was no return to excessive interventionism and protectionism again, but further correction of policies within the framework of market economy and globalization.

The 1997 global financial crisis taught that economic mismanagement, corruption, nepotism, populism and absence of transparency were the root causes of the crises encountered in the Far East countries and in Russia. Hence, a superficial implementation of the market economy (and democracy) was not sufficient. Therefore, the IMF and the WB became more careful in the more recent years in seeing more to the details of economic programmes in order to prevent corruption and populism, and to institute transparency. The global economic crisis that started in September 2008 did not alter the open economic regime implemented in DCs, neither in LDCs and NICs.

What this cursory overview of development literature and developments shows is that the most important questions of economic regime and development strategies concerning LDCs and NICs are covered and are being discussed today, but with little or no macroeconomic model or framework.

In the earlier years, in the '50s, the scanty literature on this topic dealt with the application of the Quantity Theory in LDCs, a high correlation between prices and money supply, or between increases thereof. This led the investigators to conclude that Quantity Theory was applicable to LDCs. But a high correlation between prices and money supply in these earlier development periods does not by itself suffice to conclude that the Classical System is valid. Not much attention was given to investigate the more important Classical proposition: automatic full-employment. A high correlation between prices and money supply could, on the other hand, be met also if the Keynesian System is implemented. Because with little recourse to internal or external borrowing, most of the increased public expenditures as well as private investments were financed during these periods by recourse to the printing of money by the Central Bank.

Similarly, again in the '50s, some authors pointed out that for LDCs, the important issue was not increasing expenditures, but savings, a Classical proposition [Rao:

1952]. Again, this point too is no proof of the validity of the Classical System; it was also a Keynesian recipe against excess aggregate demand and demand inflation.

Before we proceed with our short-run model, we should underline at the outset the broad framework within which we offer its profitable use.

Firstly, although we have borrowed intensively from early development models (Eckaus, Lewis, Ranis and Fei), we do not suggest that we should use this model within the framework of early development economists of the 1950's to 1970's, who recommended relatively intensive interventionism, protectionism and planning in the face of widely prevalent market failures, dual economy character, economies of scale in industry and worsening terms of trade for the LDCs. We are even further removed from the structuralists and their more intensive interventionist and protectionist recommendations, calling DCs, however, for more trade. But, neither do we accept the stand of the Neo-Classical development school of the later period which believes that the price mechanism will automatically yield optimal solutions in LDCs and NICs, and government failures could be worse whenever we may try to intervene market failures. We are abstracting here from individual differences amongst economists in both the Early and the Neo-Classical development schools.

Secondly, we agree, however, that in actual practice the governments of most LDCs and NICs went overboard with over-intensive and wrong interventionism, protectionism, planning and state production thus leading to a "command economy", a closed economy model and excessively import-substitute industrialization. Hence, we welcome the transition towards the market economy and globalization, planned IMF/WB programmes since 1970's and 1980's. This change of economic regime and development strategy was endorsed by the majority of public opinion in these countries as well as in the face of gross failures of former strategies and policies. The IMF/WB programme entails stabilization measures, adjustment and reforms for transition to the market economy and globalization. Part of the stabilization measures and adjustment reforms also aim at preventing populism, partisanship and corruption which, we believe, are the root causes of budget deficits, inflation, wrong challenging of investments, and hence also of balance of payments problems.

We believe that the short-run macroeconomic model offered here will be a useful device of ensuring macroeconomic equilibrium.

Thirdly, we also believe that LDCs and NICs have, on the whole, still a long way to go in the transition towards market economy and globalization. We do not believe, however, that the march will be towards a fully *laissez-faire* solution. This is not the case even for the USA, which as a DC implements the most "free" market economy, followed by UK, while continental Europe and Japan implements relatively greater interventionism and protectionism, open or "disguised". In the case of LDCs and NICs, market imperfections abound compared to DCs, more so in the case of LDCs. Hence, the "optimal" point or target for

government interventions should decrease as the country in question develops over time. We are abstracting here from the fact that we might choose an optimal with slightly more interventionism if we are left-of-center compared to right-of-center in both DCs and NICs.

II. BASIC PROPERTIES, ASSUMPTIONS AND FRAME FOR BUILDING A MACROECONOMIC MODEL FOR LDCs AND NICs

What is remarkable is that although these very important issues above were all covered without explicit reference to a macroeconomic system, yet all throughout, the three basic blocks were there to build a macroeconomic model or framework relevant for LDCs and NICs with excess labor and scarce capital. These were:

- The relevance and validity of the Keynesian aggregate demand, in particular, a basically Keynesian consumption and savings function for LDCs and NICs just as in the case of DCs.
- Presence of excess labor (Arthur Lewis' [1954] "unlimited supply of labor," modified) or alternatively, scarcity of capital in any given short-term.

Whereas in the DCs the maximum production attainable is given by full-employment or the natural rate of employment (NRU), maximum production in LDCs and NICs, under the conditions of excess labor and scarce capital is given by the full utilization of this scarce capital.

- There are limits to factor substitutability and factor proportions in LDCs and NICs are such that, given scarcity of capital, the amount of labor available falls beyond this range, implying part of labor will never be productively employed; its productivity will be zero, thus giving rise to the presence of technological unemployment in these countries [Eckaus: 1951].

In contrast, the factor proportions of DCs are such that they fall within the range of substitutability. Hence, full utilization of capital and full employment of labor in DCs is possible so long as prices and wages are assumed to be flexible [e.g. Solow: 1956]. Inflexibilities and rigidities will, of course, lead to Keynesian unemployment.

- Turning to the first point, we also witness non-automaticity of aggregate demand in LDCs and NICs to come to equilibrium at the maximum production point of full utilization of scarce capital. This means that investment is interest inelastic and we have Keynesian wage, price and interest rigidities.

This calls for some observations at this point.

Firstly, we may conclude that fundamentally the Keynesian System, not the Classical System, is relevant and valid for LDCs and NICs as, according to the belief of this author, it is for DCs as well. The important difference is that the production or the supply side, demand and supply of labor is very different in LDCs and NICs compared to DCs,

and this has to be taken into consideration when drawing a macroeconomic model for the former.

Secondly, in the DCs we speak generally of a tendency of aggregate demand to fall below full-employment or NRU point, giving rise to Keynesian unemployment, i.e. involuntary employment due to insufficient aggregate demand. But for LDCs and NICs the reverse is generally true. There will always be tendencies for the government to expand public expenditures, reluctance to tax adequately, leading to excess aggregate demand, that is, aggregate demand will be above the capacity limit, giving rise to persistent demand inflation. What is interesting is that this demand inflation will be seen side by side with technological unemployment. For DCs, given short-run and long run Phillips Curves, the story will be different; inflationary gap will appear only after full-employment is reached. We assume here that the main bulk of unemployment in DCs is Keynesian, that is, due to lack of aggregate demand; frictional and structural unemployment, on the other hand, is minimal.

- This also implies that fundamentally policy recommendations for LDCs and NICs can be taken up within the framework of eliminating Keynesian excess aggregate demand while maintaining a satisfactory investment level to promote growth.

In addition, presence of excess labor implies the usefulness of implementing voluntary family planning, and scarcity of capital implies that encouraging FPC flow and short-term funds makes sense, provided good use is also made of the latter.

Finally, special conditions of labor supply and demand necessitate a more detailed analysis of employment and unemployment in these countries.

III. THE KEYNESIAN AGGREGATE DEMAND FUNCTION IN LDCs AND NICs AND TWO POLICY APPLICATIONS

Given the above premises, a simple macroeconomic model can be built for LDCs and NICs within the framework of Keynesian multiplier model which works explicitly with wage, price and interest elasticity.

Two of the most important features of aggregate demand in LDCs and NICs can be conveniently represented with such a simple model:

The first is that, as in the DCs, in these countries also, consumption and savings is basically a function of disposable income; given a host of other factors that may also affect consumption and savings levels such as the interest rate, expectations of price level changes, conspicuous consumption, the tax system, political stability, social security system, demographic factors, etc.

There had been serious attempts to investigate empirically the savings function in LDCs and NICs (e.g. Singh, 1975: 121-184; Yotopoulos and Nugent, 1976: 164-183; Marglin, 1984: 31-455; etc.). All these studies showed that savings in these countries are related to income. Firstly,

retained earnings as savings of both corporate and non-corporate business depend on profit levels, hence, indirectly, on the level of income. Secondly, personal (household) savings is also dependent on the level of disposable income. Hence, we accept in our model a simplified savings function that conforms to the Keynesian absolute income hypothesis, which is falling APC (average propensity to consume) and rising APS (average propensity to save).

The second is that investment function has low interest elasticity and investment too is determined by such other factors as technological progress, economic stability, and pursuance of an economic regime conducive to private investments and FPC flow, the tax system, political stability, etc.

The main point here is that in LDCs and NICs we may not expect an automatic mechanism, fully flexible prices, wages and interest rates to bring about the equality of savings and investments at the capacity limit – as opposed to full-employment or NRU point in the DCs.

Hence we may devise a simple Keynesian multiplier model for LDCs and NICs as below (e.g. No (1)). Standard symbols are used for easy follow up.

We may start with a Simple (basic) Keynesian Equation as below for LDCs and NICs:

In the equation below Y is Total Income Level:

$$Y = C_p + C_g + I_p + I_g + X - M \tag{1}$$

C_p represents Private Consumption and it is a function of Disposable Income (Y_D) with “c” as the consumption coefficient:

$$C_p = cY_D \tag{2}$$

Y_D is Income (Y) minus Tax (T);

$$Y_D \equiv Y - T \tag{3}$$

and T is a simple function of Income (Y) with “t” as the tax coefficient;

$$T = tY \tag{4}$$

thus we arrive at the Private Consumption C_p as a more detailed function of both Income (Y) and Tax (T).

$$C_p = c(Y - tY)$$

so that:

$$C_p = cY(1 - t) \tag{5}$$

Government Consumption Expenditures (C_g) are assumed as given in the model:

$$C_g = \bar{C}_g \tag{6}$$

Private Investments (private investment expenditures) (I_p) are assumed as a given level in the model:

$$I_p = \bar{I}_p \tag{7}$$

Government Investments (public investment expenditures) are assumed as a given level in the model:

$$I_g = \bar{I}_g \tag{8}$$

Export Volume (X) is also assumed as a given level in the model:

$$X = \bar{X} \tag{9}$$

Imports (M) is a simple function of Income (Y), with “m” as the import coefficient:

$$M = mY \tag{10}$$

Solving for Y requires that we place equations (5) and (10) in the equation (1) so that we arrive at the final form of Y in the equation (11) as below:

$$Y = cY(1 - t) + C_g + I_p + I_g + X - mY$$

$$Y - cY(1 - t) + mY = C_g + I_p + I_g + X$$

$$Y(1 - c(1 - t) + m) = C_g + I_p + I_g + X$$

so that:

$$Y = \left(\frac{1}{1 - c(1 - t) + m} \right) (\bar{I}_p + \bar{I}_g + \bar{C}_g + \bar{X}) \tag{11}$$

Now, there would be two practical policy applications:

- The first would take " I_g " and as the target variable \bar{I}_g to be achieved, and solve for "t" as a policy variable and adjust t level accordingly. This is explained below.

- we assume that in LDCs and NICs, the maximum production level (income) hence total expenditure level is determined by the scarcity of capital and full use of capital which can be denoted as \bar{Y} representing “capacity (production) constraint”; i.e. it is the maximum production attainable in the short-run, given the amount of capital available, the level of technology and the level of real wage. \bar{Y} , in fact, corresponds to the full-employment income in the developed countries (Y_E) except that full use of capital entails a certain amount of technological unemployment that would manifest itself in different forms of unemployment in the market.

capacity constraint means that aggregate demand (Y) cannot exceed, but must be equal to the capacity constraint:

$$Y = \bar{Y} \tag{12}$$

- we further assume that the private consumption coefficient “c” is taken as a given (\bar{c}) in the equation and that the government encourages private savings as much as realistically possible, to arrive at \bar{c} .

keeping in mind that the disposable income is composed of private consumption and private savings hence encouraged private savings will result in an attainable small (\bar{c}) in the model.

- we also assume that the import coefficient “m” is taken as given (\bar{m}) in the equation and that \bar{m} is as low as realistically possible under the prevalent conditions of the economy. (Note that in the more advanced analysis, we may assume different import coefficients as will be mentioned in section V.)

considering I_g as the possible target parameter, hence given in the equation and the tax coefficient “t” as the “policy variable”, we can solve the equation for the value of the target \bar{I}_g , arrive at the value of the policy variable (t) and adjust our “tax system” accordingly as below in the equation (13):

$$\bar{Y} = \left(\frac{1}{1 - \bar{c}(1 - \bar{t}) + \bar{m}} \right) (\bar{I}_p + \bar{I}_g + \bar{C}_g + \bar{X}) \quad (13)$$

- The second practical application of the model is as follows: if in the solution of the equation (13) we find that “t” is too high to economically and socially be implemented, then, as an alternative approach, we should take “t” as a given policy target and we take as a constraint the maximum t level as given “t” and solve this time for the level of I_g as the policy variable and adjust I_g level accordingly as below in the equation (13’):

$$\bar{Y} = \left(\frac{1}{1 - \bar{c}(1 - \bar{t}) + \bar{m}} \right) (\bar{I}_p + I_g + \bar{C}_g + \bar{X}) \quad (13')$$

The above simple model works with only one constraint: the capacity constraint and neglects the simultaneous presence of foreign exchange constraint. The latter constraint will be taken up in section V.

IV. SUPPLY SIDE OF LDCs AND NICs: SCARCITY OF CAPITAL AND LIMITS TO FACTOR SUBSTITUTABILITY

Factor proportions in LDCs and NICs are entirely different compared to the DCs. In general we will assume, along with Eckaus (1951), that there are limits to substitutability between capital and labor represented by the ridge lines A and B in **Diagram I (a)**.

It should be noted at this point that labor surplus with zero productivity in agriculture is a simplified assumption not confirmed by empirical investigations (e.g. Singh, 1975: 55-120). Instead, low labor productivity in agriculture, the need for investments to keep up or raise agricultural output before transfer of labor to industry, indicating continued,

albeit weak substitutability are generally accepted as more realistic (Yotopoulos and Nugent, 1976: 198-218).

Many development economists who reject a simplistic zero productivity hypothesis, however, still talk about the existence of over-population, surplus of labor –particularly unskilled labor-, increasing urban unemployment, rural to urban migration, and need for investments to increase both output and employment further. All this suggests that we do have labor surplus in a more complex sense than in Lewis and Eckaus, and hence we could still accept a short-run capital constraint. In fact, labor surplus is generally accepted by Neo-Keynesian and Neo-Marxist development economists alike and is rejected only by Neo-Classicals (Marglin, 1984: 96-100). This means a blurred, instead of a clear-cut distinction of technological and disguised unemployment and a blurred range of capital constraint to output. Since our main aim here is to demonstrate the non-automatic equilibrium of Keynesian aggregate demand with aggregate supply, constrained by shortage of capital, we have decided to work with the simpler and neater, though less realistic assumption of limited factor substitutability and zero (or near zero) productivity.

In the DCs this problem can be avoided because actual factor proportions fall between the ridge limits. But for LDCs and NICs with scarce capital and excess labor, factor proportions is at a point like L, which is beyond the A ridge line. This implies that SL amount of labor will have zero marginal productivity, hence will not be “productively” employed even if we reduce the real wage down to zero (point D). This means hypothetically OS labor will be employed, SL is technological unemployment.

Raising the real wage above zero will reduce the amount of labor productively employed and maximum production (capacity constraint) still further. For instance, when the wage rate is at subsistence level w_s , and with the w_s/r , equilibrium will be at point E. The amount of labor productively employed will fall from OS to OR, total unemployment will rise to RL. Of this, SL will still be “technological unemployment”, and RS will be “unemployment due to $w > 0$ ”.

A further rise in wages to, say w_m : the market wage, and with the w_m/r in the final equilibrium productively employed labor will be further reduced to OP, technological unemployment will remain SL, unemployment due to $w > 0$ will rise from RS to PS, as at point F.

To follow how this total unemployment will manifest itself in the labor market, say as involuntary unemployment, voluntary unemployment and disguised unemployment, we need to derive labor supply and labor demand curves. For this, we may make use of Lewis’ “unlimited supply of labor” (1954) modified to fit into this analysis, as in **Diagram I (b)**.

Diagram I (b) depicts total labor demand (D_L) derived from the isoquant map in **I (a)**; and total labor supply (S_L). It is not segregated into agriculture and non-agriculture as in Lewis (1954) and also in Gillis *et.al.* (1987: 54-60). S_L is conceived to have zero elasticity at the subsistence wage

(w_s) but only for a limited range OM, beyond which it will be positively sloped. The underlying cause is not population growth at w_s but the simple presence of surplus labor in the short-run. We abstain here from defining subsistence level and sectoral, regional differences in wages.

First of all productive employment (employment with positive marginal productivity) should be separated from disguised unemployment. Disguised unemployment, using a crude definition, is labor that is actually employed and works, not seeking employment but has zero productivity because it is in excess. We are omitting here whether concomitant small changes in organization should be made. We meet with disguised unemployment not only in small agricultural units, but also abundantly in public institutions, and we should even include peddlers and small shoppers. Actual statistics on employment cannot make this distinction while research and calculation is not so easy to accomplish. Hence, this distinction is analytical and conceptual due to difficulties of statistical estimation. Let us suppose that we have XL disguised unemployment and is not included in the labor supply curve S_L . The rest of labor OX is included in the labor supply.

Following Lewis, we visualize a horizontal supply at the subsistence real wage (w_s) but, differing from Lewis, we assume it will not be indefinitely horizontal because we are dealing with the entire economy and not only with the industrial sector. At point M, in our model, workers begin to demand higher wages than the subsistence level.

Now, we assume that the labor unions and/or the government authorities set the market or the “negotiated” real wage rate higher; $w_m > w_s$. We further assume that all parties and people concerned obey this wage. This is not necessarily always the case and some people would be willing to work below the wage set by the labor unions or the government; otherwise illegal child labor may be employed. But supposing they all obey this wage, then the supply of labor will shift up.

The equilibrium in this case will be at point F (both in **Diagram I (a)** and **I (b)**). At this point, the number of workers productively employed will be OP; there will be XL “disguised” unemployment; so employment statistics will show a “total employment” of OP+XL.

Total unemployment was PL of which SL was “technological” unemployment, and SO unemployment due to $w > 0$. Of this total PL unemployed, XL was disguised unemployment; NX will be “voluntary” unemployment, PN “involuntary” unemployment. But this involuntary unemployment does not arise from Keynesian lack of demand; it stems from technological reasons such as scarce capital, limited substitutability between labor and capital, and in addition, because $w > 0$. For w_m , the capacity constraint will be Y_1 , that is $\bar{Y}_k = Y_1$ or the area GFPO in **Diagram I (b)**.

We have refrained here from going into “seasonal” unemployment in agriculture as it defines disguised agricultural unemployment as well; and seasonal

unemployment in the economy as a whole, including effects of agricultural movements and the construction season.

This simple analysis has brought the point to heart that labor supply; labor demand and the conditions of the production function are distinctly different in LDCs and NICs compared to DCs.

Needless to say, this analysis is valid and relevant for an overwhelming majority of countries, excepting the earlier development stages of the USA, Australia and Canada in which cases we had scarcity of labor and abundance of natural resources.

The capacity constraint arrived at in **Diagram I** is transferred to the simple Keynesian Cross in **Diagram II** with aggregate demand in excess of capacity constraint indicating an inflationary gap and demand inflation for LDCs and NICs (**Diagram II (a)**) compared with DCs giving a deflationary gap (**Diagram II (b)**) This shows the major problems of LDCs and NICs are the presence of capacity constraint and the tendency of the government to raise aggregate demand inflation; the major problem is not insufficient aggregate demand. Thus, policy recommendations should be focused on eliminating the excess aggregate demand while still maintaining a satisfactory investment level to attain a satisfactory growth rate. This was explained in the above section.

V. MODEL WORKING WITH BOTH CAPACITY AND FOREIGN EXCHANGE CONSTRAINTS

We accept here that limited availability of foreign exchange will generally place a second constraint on LDCs and NICs, following Chenery and Strout (1966) and despite Lal’s (1992) statement about its implausibility. To include this into our simple Keynesian multiplier model we need a more detailed analysis of imports. Except for M, all other parameters and equations are the same as before. The more detailed import function (M) is presented in equation (14) below:

$$M = M_c + M_i + M_x \tag{14}$$

are subdivided into imports of consumption, imports of investments and imports of exports where

M_c represents “imported inputs” used in the production of domestic consumption goods plus direct imports of final consumption goods, and

M_i represents “imports of inputs” used in the production of investment goods plus direct consumption of final investment goods,

M_x represents “imports of inputs” used in the production of export goods

such that the import coefficient for investment goods is highest.

Imports for consumption (M_c) entail both direct imports of consumer goods and imported inputs used in the domestic production of consumer goods; similarly for imports for

investments (M_i). Imports for exports (M_x) entail imported inputs used in the production of export goods.

In this simple version we may assume that public and private consumption have the same import coefficient \dot{m}_c ; similarly for investments \dot{m}_i . Hence:

$$M_c = \dot{m}_c(C_p + C_g) = \dot{m}_c(cY - ctY + C_g) \quad (15)$$

$$M_i = \dot{m}_i(I_p + I_g) \quad (16)$$

$$M_x = \dot{m}_x X \quad (17)$$

And as an important assumption when devising policy targets, we may assume:

$$m_i > m_c > m_x$$

When solved, the Aggregate Demand level (Y) will be given by the equation (18) below:

$$Y = \frac{1}{1-c(1-t)(1+m)} ((1-m_i)I_p + (1-m_i)I_g + (1-m_c)C_g + (1-m_x)X) \quad (18)$$

And the two constraints will complete the picture:

$$Y \leq Y_K$$

$$M \leq X + \bar{A}$$

where \bar{A} is the maximum net credit and aid obtainable.

Presence of two constraints complicates the drawing up of targets:

- a) If we choose too high an “ I_g ” limit, most of the foreign exchange will be used for investments, thus we may fall below \bar{Y}_K while fully utilizing $M = X + \bar{A}$. It would also necessitate a very high t ratio.
- b) By decreasing the I_g target, releasing foreign exchange for domestic production of consumer goods, we may reach a point, which would satisfy the two limits simultaneously:

$Y = \bar{Y}_K, \quad M = X + \bar{A};$ we can then lower t also compared to the first alternative.

- c) Even if this reduced t ratio is still too high politically and socially, then we would have to take that limit t as the target and solve for a smaller level of I_g . This would give $Y = \bar{Y}_K$ but $M > X + \bar{A}$; that is, capacity constraint will be fully utilized, but we will demand less net foreign aid and credit than the maximum amount we can obtain.

VI. POLICIES IN BROAD OUTLINE FOR ELIMINATING EXCESS AGGREGATE DEMAND

To demonstrate the problem of excess Keynesian aggregate demand and policies to eliminate it, we begin with a LDC or a NIC which had been implementing a command economy, interventionism, protectionism and

inward-looking import-substitute industrialization in the past but began to work towards the market economy, outward orientation of the economy and globalization. This entails elimination or otherwise decreasing government fiat and subsidies, trade liberalization, shifting from fixed exchange rate and over-valued currency practices to the flexible exchange rate regime, or otherwise following a realistic exchange rate policy. It also implies encouragement of foreign private capital FPC or direct private investments (DPIs) flow and encouragement of financial funds.

A privatization programme will also begin to be implemented. Public investments will be reduced and confined, or otherwise directed mostly to productive and social infra-structure. Moreover, steps will be taken to further reduce both inefficient public investments and current public expenditures by means of eliminating populism and corruption and by establishing transparency of all transactions and government auctions.

Taxes will be increased by increasing the tax rate while also trying to attain tax equity.

All this exemplifies the global trend among most LDCs and NICs that started in the mid 1970s up to 1980s and continues up to the present because all this is a lengthy process.

This change in economic regime, development strategies and economic policies will eliminate excess aggregate demand and demand inflation depicted, in broad outline in **Diagram III** in terms of Keynesian I and S curves. Note that the situation in **Diagram III** may be interpreted as changes and improvements undertaken in one short-run period out of the lengthy process of transformation. For the sake of simplicity and clarity we assume that excess demand is completely eliminated by the end of that period; otherwise one may visualize a case in which the excess demand is reduced only by a targeted amount but not completely eliminated.

In **Diagram III**, the LDC or probably NIC starts with $I_p + I_g + C_g + X$ and $S_p + T + M$ and an inflationary gap AB. The above changes in the economic regime and economic policies will have the following effects:

- Firstly, there should be scope for some small organizational improvements in the methods of production, distribution and sales, including inventory policies and wage systems that could expand the production capacity (capacity constraint) even in the short-run, say from \bar{Y}_K to \bar{Y}_K' as in **Diagram III** on the Keynesian I and S.
- With the transition towards a market economy, private investments will increase from I_p to I_p' . Dynamism of the private sector, market price mechanism, competition and transparency will induce private investments to be channeled to the most productive areas. They would also accelerate technological progress. All these combined will expand the capacity constraint in the long run as fast as possible.

- Efficient voluntary family planning, on the other hand, coupled with the increase growth rate of GNP and of employment, would hasten the long-run elimination of surplus labor; which, *per force*, is not shown in this short-run analysis.
- While private investments (I_p) including FPC are increased, both public investments and particularly public consumption expenditures will be lowered substantially from I_g to $I_g\downarrow$ and from C_g to $C_g\downarrow$ consequently. We assume here that lowering of public investments and its restriction to productive and social infrastructure will not reduce the growth rate since most public investments in the previous periods had low productivity while total investments $I_p + I_g$ would be greater in the planned period compared to the initial period.

In addition, institution of transparency, elimination of corruption and populism will also lower C_g appreciably; I_g will also be lowered even further.

- The new exchange rate and foreign trade regime will definitely raise exports from X to $X\uparrow$.

On the other hand, we can assume that the fall in public investments and particularly public consumption expenditures ($I_g\downarrow + C_g\downarrow$) will more than compensate the rise in private investments and exports ($I_p\uparrow + X\uparrow$); i.e. $(I_g\downarrow + C_g\downarrow) > (I_p\uparrow + X\uparrow)$.

- As a result we have a new I level $I_p\uparrow + I_g\downarrow + C_g\downarrow + X\uparrow$ which is lower than the initial $I_p + I_g + C_g + X$. Though I_p and X would have risen, I_g and C_g would be reduced more drastically. The lower $I_p\uparrow + I_g\downarrow + C_g\downarrow + X\uparrow$ would further reduce the inflationary gap. It is already noted that the lowering of the public investments (I_g) will have no negative effect on the growth rate, and the contrary will be valid.
- We assume that the new economic milieu will be conducive to private savings and it will rise from S_p to $S_p\uparrow$ as shown as a rise in the Keynesian S curve.
- At the same time we assume that the government will undertake a tax reform and will increase the tax rate and also improve on tax equity. Taxes will rise from T to $T\uparrow$.
- We assume that the new policies will enable the NIC to increase its imports from M to $M\uparrow$ while putting it in more productive use.
- Thus, as a result, we assume $S_p\uparrow + T\uparrow + M\uparrow$ will be higher than the initial $S_p + T + M$, such that the inflationary gap AB will be completely eliminated, at point C .

Obviously then, the effects at any given short-run moving towards the market economy and globalization, implementation of prudent fiscal management can very well be studied and demonstrated with the aid of a Keynesian Aggregate Demand model. This would enable us a clearer picture for policy recommendations to attack demand

inflation while, at the same time, increasing the rate of growth of GNP and decreasing the rate of unemployment.

VII. CONCLUSION(S)

It should easily be derived from the presentation of the model and its policy implementations that, in fact, it not only is in line with but also provides a short-run macro framework for the policy recommendations made by the IMF to LDCs and NICs since the '50s on, and for the move of LDCs and NICs towards the market economy, outward-orientation and globalization since the '70s and '80s.

One major policy recommendation by the IMF aims at raising the growth rate by the encouragement of private investments and encouragement of foreign private capital flow (direct private investments). This is simultaneous with the actual lowering of the public investments level so that, when the rise in private investments is taken into consideration, the total level of investments would be higher than before. The increase of private investments would also affect the productivity and hence the total production level. Some of this effect would be realized within the short-run, implying a rise in the capital constraint, hence GNP; but the long-run effects would be more pronounced.

Privatization, as another policy recommendation, will also increase the total production level hence the capital constraint because private investments would have a higher productivity. Privatization will also reduce the excess budget deficit hence the level of aggregate demand thus the inflationary gap and the demand inflation would decrease.

Raising the tax rate hence the level of taxes would also reduce the budget deficit, aggregate demand and demand inflation. Granted there will be a fall in the private savings because of the rise in taxes and hence the fall in disposable income. But this fall in private savings due to tax rise can be compensated by policy measures aiming at raising the actual tax collection, say, by reducing tax evasions. Political and economic stability can also raise both private investments and correspondingly private savings.

The model stresses, along with IMF, the need to decrease government consumption expenditures hence the budget deficit and inflationary gap.

The foreign exchange constraint, on the other hand, is largely, if not completely, eliminated by the rise in exports and other foreign exchange earning items and a fall in imports by the shift from fixed to free exchange rate regime.

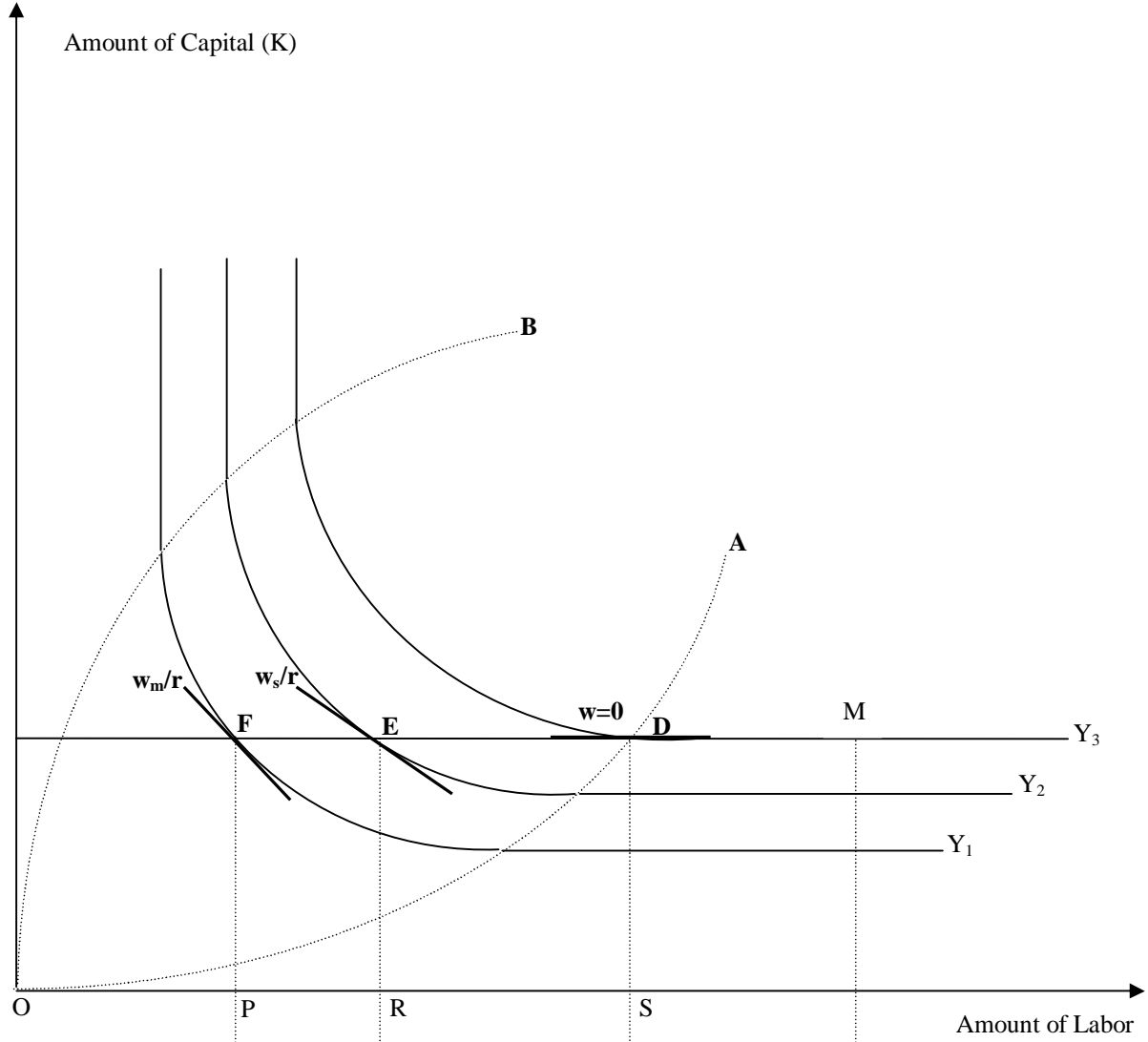
The model stresses the need for an in depth analysis of imports and its breakdown into imports of investments, imports of consumption, imports of exports, and of the lowering the corresponding import coefficient.

It also stresses the importance of keeping limits to wage rise because that would reduce the employment and hence production, and increase unemployment.

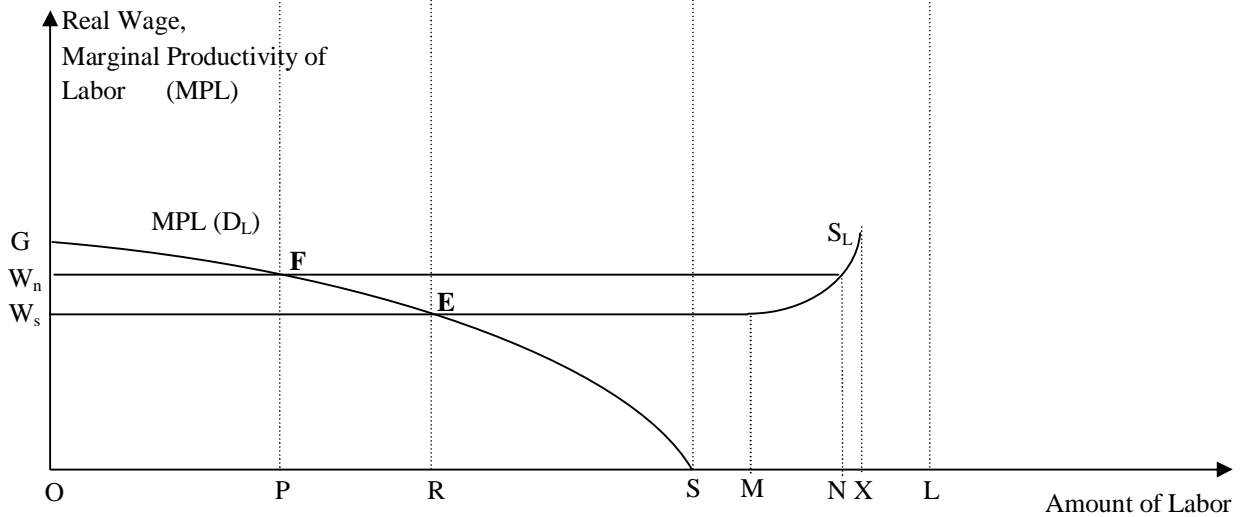
The model, in addition, also provides a framework for a more detailed analysis of unemployment in LDCs and NICs and its breakdown into voluntary, disguised and technological unemployment. But it is not the agenda of

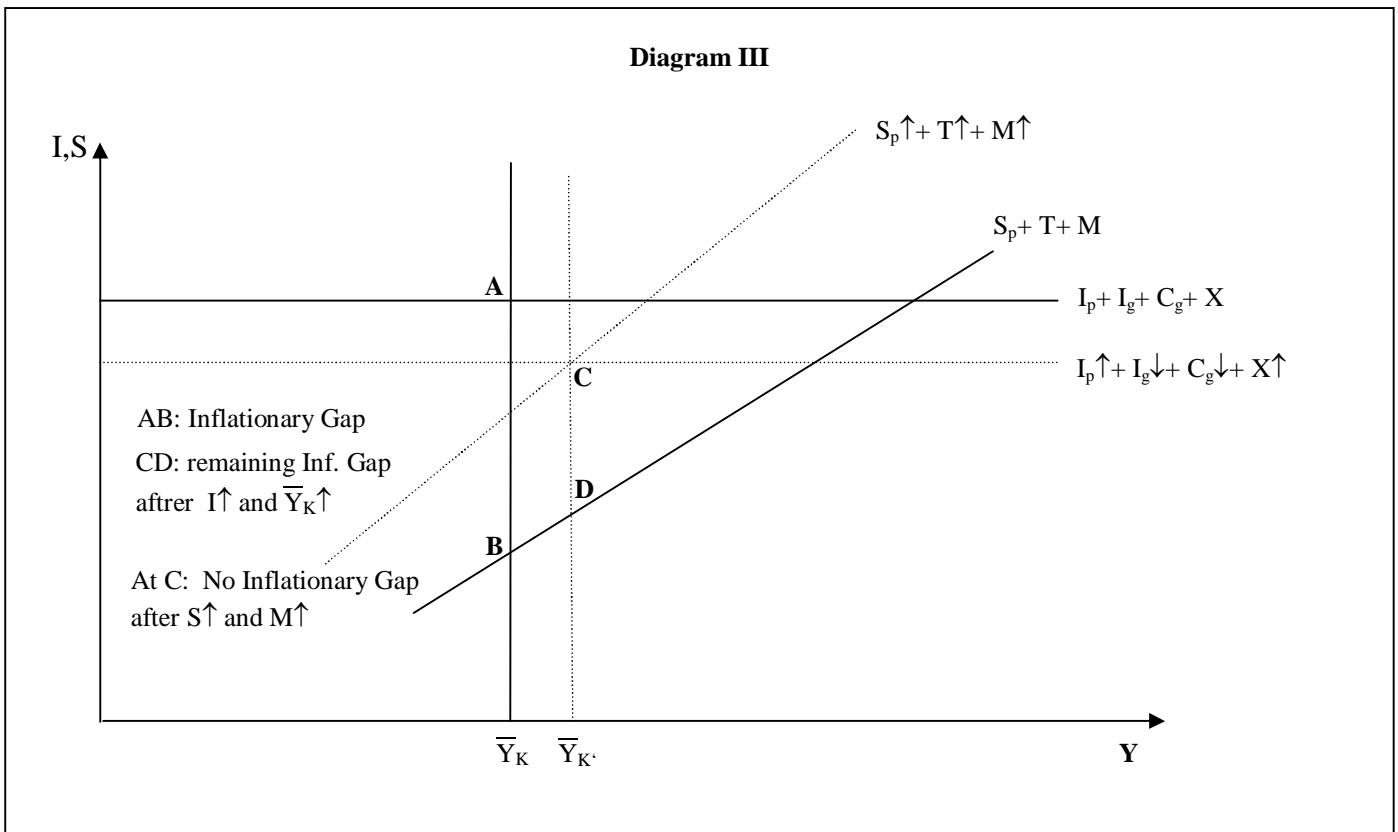
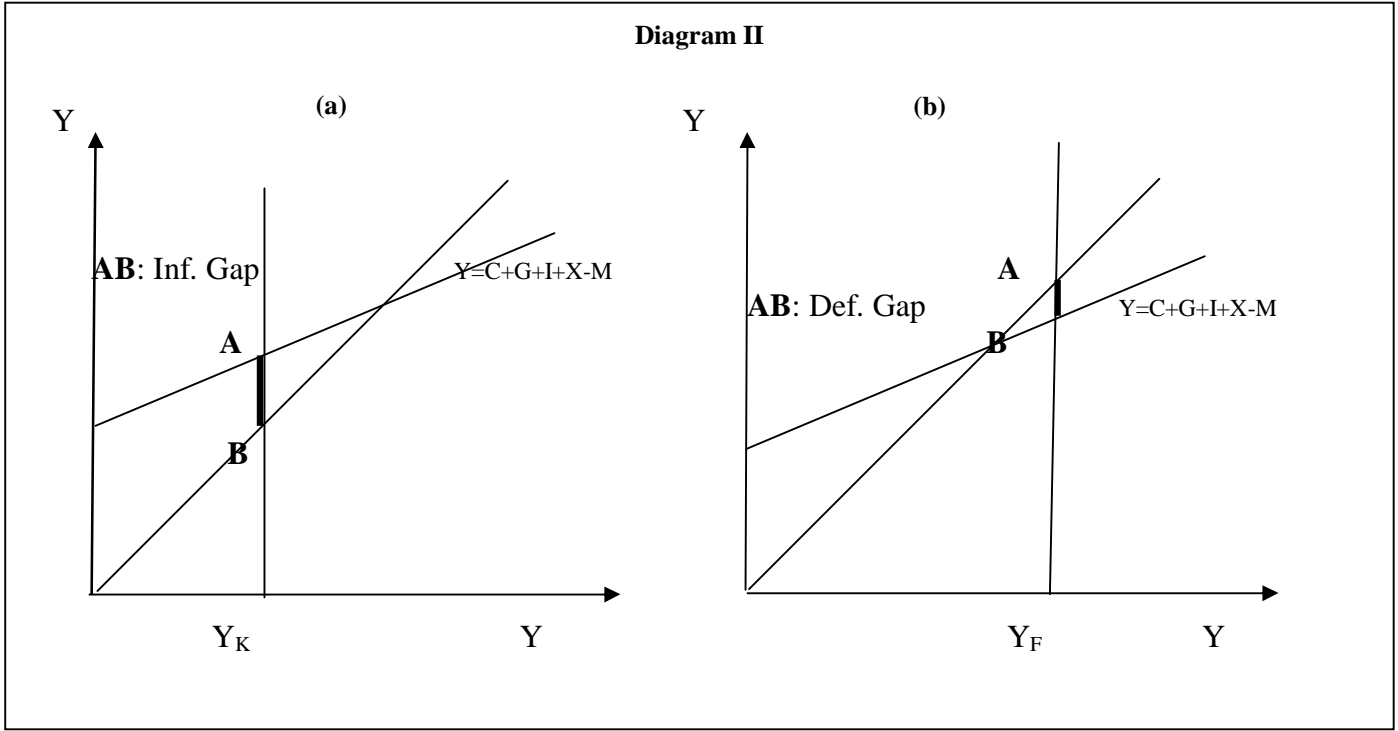
IMF to go into such an in-depth analysis of unemployment. Suffice it that IMF policy recommendations will reduce total unemployment in the long-run when properly implemented.

Diagram I
(a)



(b)





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