Interaction of Income Distribution, Taxes and Economic Growth
(The Case of Iran and Some Selected East Asian Countries)

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Abstract

The impact of fiscal policies on economic activities is one of the most important issues in both theory and practice. In this paper, we analyze economic growth and income distribution effects of tax and also the impact of inequality on economic growth in Iran and some selected East Asian countries. For this, we use panel data regression in the period of 1990-2006. The Results denote that the impact of goods and services tax on inequality and growth is insignificant, but the ratios of tax on income, profits and capital gains have positive and significant effects on Gini index and growth. International trade tax has a negative effect on growth. We also find evidence of a positive impact of income inequality on growth.

Keyword: Tax, Income distribution, Economic growth.

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1- Introduction

The role of fiscal policy in influencing economic activity has been one of the most extensively discussed issues by both academics and policy makers. Although, there are excessive literatures about the effects of fiscal policy, a government's role as it relates to taxation and public spending has never gone unquestioned.

The purpose of this research is to study the impacts of taxation on inequality and economic growth in some developing countries (including Iran and seven East Asian countries) in period of 1990- 2006. This paper is organized as fallow: the next section attempts to explain the theoretical base of relationship between economic growth, income distribution and fiscal policy. Section 3 presents the regression models and estimate results of these models. Finally, the section 4 contains the conclusion.

2- The Theatrical Arguments

One sphere of government activities involves taxation and spending. Taxes represent coercive transfers of property from individuals (taxpayers) to the government that is charged to spend them. In public finance theory we can find the famous Wagner's law which states that countries on a higher level of economic development tend to increase the scope of activities of their governments and therefore experience higher tax rates (Myles 2000).

In accordance to the above definition, taxation is not and cannot conceivably be made neutral to the market. By neutrality to the market we understand the situation when an individual or a firm functions as part of the market. This can be the case only insofar as the individual or the firm in question works within the framework of private property rights and freedom of contract. Thus, every attempt to reconcile taxation with neutrality vis-á-vis the market is doomed to fail. However, it is of interest to study how different modes of taxation influence behavior of individuals affected and to distinguish between taxes that distort the actions of individuals to different degrees (Myles 2000).

As in Solow (1970), growth simply depends on the accumulation of capital and labor in a neoclassical framework, so that the existing empirical works study tax effects on investment and labor supply those capture the

relevant effects on growth. In this framework, however, there would be no effects of tax on total factor productivity.

Endogenous theory provides models that can assess the effects of taxation on economic growth. Numerous channels were identified through which taxation can affect growth (Engen & Skiner 1992).

The more recent literature on endogenous growth, however, suggests that the positive externalities omitted from the traditional neoclassical models play an important role in explaining long- run growth. There could be a variety of possible sources of these externalities. There is a strong presumption that R&D and entrepreneurial activity more generally provide such positive spillovers. Lucas (1988) emphasizes that education can generate important positive externalities, since individuals learn by observing the behavior of others. Alternatively, De Long and Summer (1991) report evidence equipment investment may generate important positive spillovers.

In quantitative terms, a wide rang of theoretical predictions arose for the size of the growth rate effect depends just on the structure of model and on parameter values within the model. The growth- reducing effect of taxation is increased in open economy models and reduced, and possibly even revered, if life- cycle behavior is considered. The production process for human capital is also critical, as are the elasticities in the utility function and the rates depreciation. A fair summery would say that the theoretical models introduce a range of issues that must be considered, but that they do not provide any convincing or definitive answers.

A pro poor growth strategy does not have to only focus on economic growth, but could also be combined whit active policy income redistribution. However, there may be a trade of: If more rapid reduction in poverty can be achieved through reduction in inequalities, then distributional policy takes on a greater priority. But on the other hand, if greater levels of inequality appear with secure rapid growth lead to faster poverty reduction, then there may well be greater tolerance of distributional inequalities.

Income distribution has always been a dominant concern of the public sector. Governments are empowered to impose taxes on commodities, income and wealth and spend the resulting revenues in many ways to achieve a more equitable distribution. Redistributive transfers, that it,

assistance to the poor and the disable, social insurance and pensions, agricultural supports, can benefit either a large segment of the population or a narrow one. "Similarly in the absence of a complete system of privet markets for (particular goods and services) some public sector provision is likely to be justified on distributional grounds" (Hare, 1988, p.80).

While earlier models such as Harrod- Domar model predicted that greater inequality would lead to higher growth rate, there was, during 1990s a shift in focus towards the opposite effect: can greater inequality lead to a lower level of overall growth? Empirical evidence from both industrialized and less developed countries had tended to confirm the negative impact of inequality on growth. Historical and empirical evidence of various countries denotes that there are copies factors that affected inequality levels. Kaasa (2003) categorized these factors in five groups: Economic growth and development, demographic factors, political factors, historical, cultural and natural factors, and macro economic factors. Economists have long sought to understand the link between economic growth and income inequality. This arguments started by Kuznets (1955).

Kuznets famous hypothesis suggests that, at low levels of per capita income, inequality increases whit rising per capita income and decreases only in the latter stages development- resulting in an inverted U – shaped relationship between per capita income and income inequality – based on a model where individuals migrate from low – wage rural sector whit little inequality to an urban sector characterized by high income inequality and high average income. A large number of multi country empirical studies have shown however that the Kuznets hypothesis explains only a very limited part of inter country variation in income distribution (Bulir and Galli 1995) and that other policy and structural variables- such as tax and government spending, social transfers, state employment or human capital- improve significantly the explanation of the cross- country differences in income distribution (Milanovic 1994, Tanzi 1998, Chu, Davoodi and Gupta 2000).

Galli and Hoeven (2001) explore theoretically empirically the effect of monetary policy and inflation on income inequality in developed countries. They argue that the effects of inflation on inequality depended on the initial rate of inflation, reducing inflation in economies whit initially low inflation

might increase inequality. They explored the empirical evidence for the non-monotonic long- run relationship between inequality and inflation the US over the period 1967-1999 and in 15 OECD countries using a panel data over the period 1973- 1996. From both sample they found evidence in favor of a U- shaped long run relationship between inflation and inequality: income inequality decreases as inflation rises from low to moderate, and increases again as inflation grows beyond a certain threshold

Recent studies on income distribution and endogenous growth by Alesina & Rodrik (1991), betola (1991), perotti (1993) and person & tabllini (1994) return to the aforementioned debate. Differences in public policy are one possible explanation for differences in countries economic growth rate. It is reasonable to assume that if incentives to accumulate capital are low (e.g. under conditions of financial repression or excessive taxation), private ownership of capital is banded, or legal titles are unclear, people will not invest as much as they would otherwise. If growth is related to investment, growth will be slower.

Barro (2000) finds that higher inequality tends to retard growth in poor countries and encourage growth in richer countries, and finds in a sense support for the Kuznet curve. The three main arguments in favor of a positive relationship between growth and inequality, reviewed in Aghion,et al (1999) : The first arguments is that if the growth rate is positively related to the proportion of national income that is saved, more unequal economies are bound to grow faster that economies whit a high level of distribution, since the marginal propensity to save of the rich is higher than that of the poor. The second is related to the issue of investment indivisibility. Investments often involve a large sunk coast, which pre- supposes that wealth needs to be concentrated for such investment projects to be undertaken- in the absence of well developed credit market. The third argument realizes on the effects of incentive through distribution. Beside the fact that a redistribution of wealth creates a more equalized distribution income, if redistribution financed by income taxes, this would also diminish the incentive to accumulate wealth.

Alesina and RodriK (1991) similarly hold that higher inequality, reflected in individual's capital- labor ratios that are highly skewed to the rate, will be bad for growth. In the model propose by Protti (1993) the

relationship between inequality and growth is not monotonic. His model also generates endogenously the well- known Kuznets relationship. Empirical studies by Alsina and Protti (1993) and person and Tabelini (1994) link initial income distribution to economic growth through transfers or productive government spending.

Ruth-Aïda (2005) explores the relationship between income inequality and growth, using panel data on Swedish counties from 1960-2000 and finds a significant impact of inequality on growth, but the magnitude of the effect decreases with the length growth period studied. Papadimitrio (2006) denotes that Public provisioning of good and services and redistribution policies can be defined according to different criteria, some of which have real economic significant while others are matters of convention and convenience. Income distribution has always been a dominant concern on the public sector. Targeted redistributive transfers, that is, assistant to the poor and the disabled, social insurance and pensions, agricultural supports, can benefit either a large segment of the population or a narrow one. Similarly in the absence of private markets for (particular goods and services) some public sector provision likely to the justified on distributional grounds (Hare 1988, p70).

Deininger and Squre (1997) find that there are a strong systematic relationship between overall growth and growth in the income of the poorest quintile. This would suggest that even when inequality has worsened; its negative effect on the poor has been more than outweighed by the positive effect of growth. Also they find that: while policymaker should certainly pay attention to the distribution consequences of different policy options, the fear that economic growth on its own will have a systematic negative on the distribution of income is unfounded. Although, redistributive policies have the potential to benefit the poor both directly and indirectly, they will do so only if redistribution does not jeopardize investment.

2-1- Data Description

Based on the data prepared, this section presents an overview on macroeconomic indicators of our selected countries for giving a concrete historical perspective on paper's hypotheses.

Figure 1 gives a general picture of income distribution (represented by Gini coefficients), growth economy and tax structure of our eight selected East Asian countries in the last 17 years. These data are reported in the nation master.com, penn world table, GFS and IMF reports. Not all the years are reported, normally because of the lack of data for those years, or the difficulties in the use of those data.

Starting with China, it appears that the rapid growth in the Chinese economy has resulted in rapid increase in the average income of the Chinese people. Urban-rural income gap in China continues to widen greatly in recent years. Dual structure of the economy (that is urban-rural differentiation) and its ramifications is the root cause of China's income inequality.

The unbalanced allocation of FDI has exacerbated this regional income inequality. Policy flaws such as lax taxation systems and monopolization of some industries also contribute to worsening income inequality in China.

Whereas China may exhibit a typical case of Kuznets-type growth where inequality increases in the early period of growth, the situation is different in Korea. China and Korea are two of the fastest economies in East Asia in the last two decades.

As a result of many factors, among which are the equalizing land reforms and the economic assistance from the US, early Korean development was characterized by increased income equality as the economy grew. However, it appears that Korean income distribution has become worsened after more than two decades of rapid growth. The Singapore case is quite interesting.

Compared with Korea, the income inequality in Singapore is much more unequal, and this is probably explained by the fact that the wage structures for the skilled workers, especially at the management levels both in the public and private sectors were already high at the beginning of its nationhood, and these wage differentials based on technical skills and professional characters of the employment has kept these income disparities at a high level.
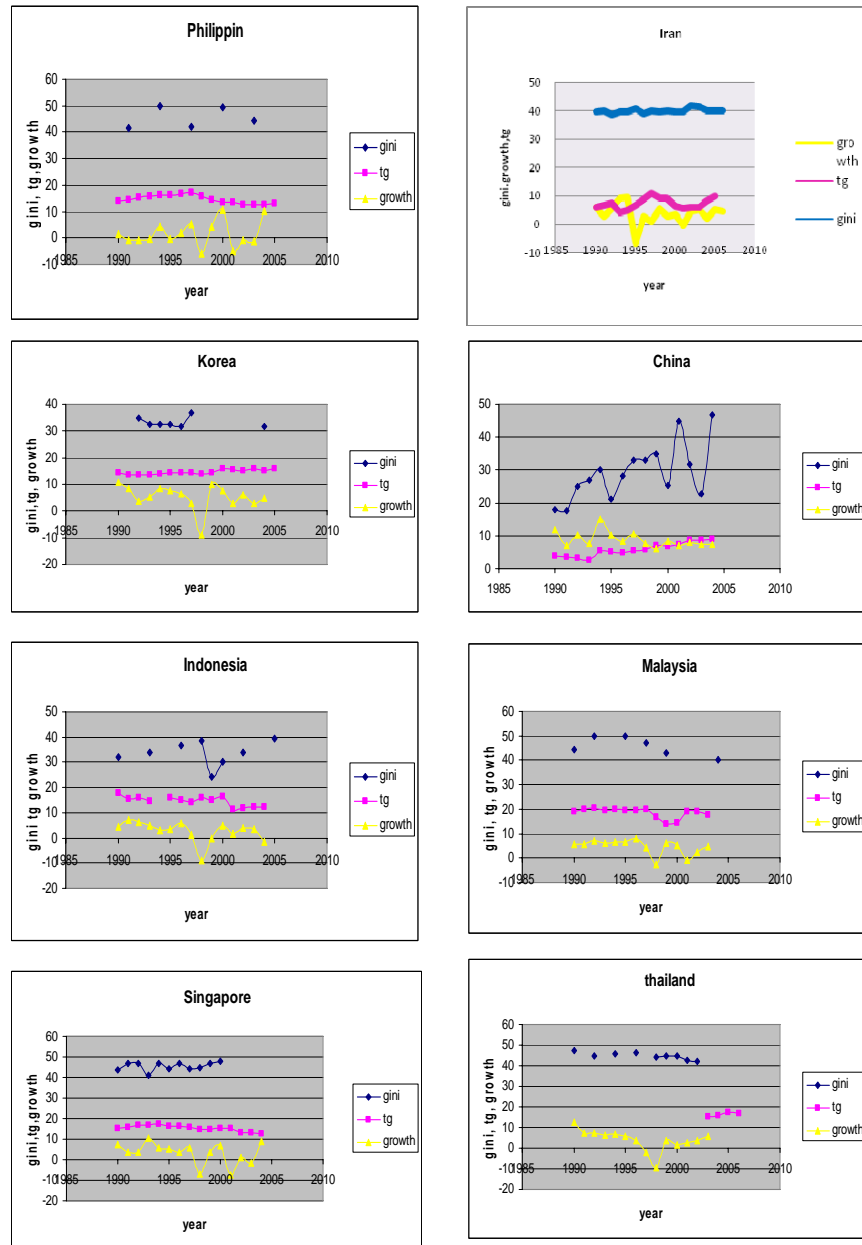
Figure 1: Gini index, tax ratio and economic growth in our sample

This relative large inequality could be the result of the no inclusion of benefits derived from subsidies on housing, education, health, and other income transfers to the lower income group. Thailand and the Philippines are having more unequal income distributions than Malaysia and Indonesia. For Thailand, its relationship between economic growth and income inequality is a typical Kuznets curve type, that is to say income inequality was relatively low at the beginning of the 1960s, and this had increased in step with the growth of the economy.

The absence of high and enduring economic growth which was the single most important constraint to the pace of poverty reduction could also contribute to the persistently high income inequality in the Philippines. Policies such as better schooling, agrarian reforms, investment in land quality improvement, removal of price distortions, and so on not only could bring about reduction in poverty but could reduce persistent income inequality as well. For Malaysia, the high growth rate of the whole economy associated with the intensive growth of the manufacturing sector (with double-digit growth between 1970 and 2000, with the exception of the 1981-85 period) had contributed to drastic fall in poverty level.[1]

It seems that the renewed high-growth period in the early 1990s in Malaysia has created a new condition for greater income inequality, but the crisis has dampened this condition resulting in lower Gini ratio. But the trend of rising income inequality is apparent. The continuation of state policy in the form of the National Development Policy (NDP) for 1991-2000, and the National Vision Policy of 2001-2010 should see a greater reduction in income inequality in Malaysia due to the increase in government social expenditure .The increased income of the average Indonesian has resulted in marked reduction in poverty. However, while the improvement in poverty reduction is clear, the improvement in income inequality is less clear.

Income distributions tend to be rather stable over time so a stronger trend would be rather unusual. In Iran, the Gini index has been relatively

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1- The share of agriculture declined rapidly from 29 per cent in 1970 to 8.5 per cent in 2000 while the share of the industrial sector increased from 31.4 to 40.3 per cent in the same period.

stable over the last tow decades. Although, during the 2005-06 inequality in both rural and urban areas worsened. Possibly because higher inflation hurt those below the median income level more than those above it. A stronger oil revenues and consistent efforts at macroeconomic and structural reforms have resulted in a significant lowering of the annual inflation rate and a higher and more stable GDP growth rate.

3- The Model

We analyze the effects of taxation on income distribution using panel data regression. The econometric model specification is given by fallowing equation.

$$gini = \beta_0 + \beta_1 kg + \beta_2 s + \beta_3 t + \beta_4 i + \beta_5 gdp_{(t-2)} + \inf_{t-1} + u \qquad (1)$$

That:

Kg: the ratio of government expenditure to real GDP

S: the ratio of income, profits and capital gains tax on total government revenue

I: the ratio of international trade tax on total government revenue

T: the ratio of goods and services tax on total government revenue

gdp_{t-2} : GDP with two lags

$\inf_{t-1}$: Inflation with one lag

In this regression within estimates as well as fixed effects estimates are rejected as inconsistent by a Hausman (1978) test. The random effects estimates are reported in table (1).

Table 1: results of the Gini equation

variable	Coefficient	z- value
Kg	-.392	-2.94
t	-.0153	-0.30
S	0.233	2.86
I	-0.094	-0.78
gdp_{t-2}	-0.00001	-5.10
$\inf_{t-1}$	0.283	2.68
cons	42.5	12.94
R- sq: within = 0.0138 Between = 0.855 Overall = 0.526		wald chi2 (6) = 53.33 prob> chi2 = 0.000

The results denote that government expenditure ratio and GDP with two lags have negative and significant effects on Gini coefficient, with estimated coefficients of -0.392, -0.00001, respectively. Education, health and other transformation payment expenditures of government include a large part of budget, in developing countries. Thus, current expenditures of government are redistributive instruments in these countries. The impact of tax on goods and services on inequality is insignificant, but the ratios of tax on income, profits and capital gains have positive and significant effects on Gini index. The weakness of tax system, tax evasion, capital limitation, property tax, and inadequate social security policies all cause inefficiency of tax system in income redistribution. Higher inflation rate leads to higher inequality, significantly, and this is consistent to stated theories above.

Equation 2 relates logarithm GDP to tax component.

$$\lg dp = \alpha_0 + \alpha_1 i + \alpha_2 s + \alpha_3 t + \alpha_4 \inf + \alpha_5 openk + \alpha_6 kc + \alpha_7 kg + u \qquad (2)$$

Where tax component, kg and inf is same as equation 1, openk denotes the openness and kc is the ratio of consumption to GDP.

The Hausman test shows that random effects results are consistent.

Table 2: results of estimated growth equation

variable	Coefficient	z- value
kg	-0.33	-4.87
t	-0.0196	-1.41
s	0.035	1.93
i	-0.15	-4
kc	-0.083	-2.48
openk	-0.033	-10.51
inf	-0.074	2.78
cons	22.24	9.55
R- sq: Within = 0.0066		wald chi2 (7) = 217.07
Between = 0.98		prob> chi2 = 0.000
Overall = 0.697		

The results, which presented in table 2, show that the effects of government expenditure, trade openness and consumption ratio on growth is negative and significant. The ratio of income, profits and capital gains taxes to total government revenue has a positive effect but, international trade tax has a negative effect on growth. The impact of inflation on economic growth in these countries is negative.

Equation 3 presents the relationship between inequality and growth.

$$\lg dpper = \gamma_0 + \gamma_1 ki + \gamma_2 openk + \gamma_3 gini + \gamma_4 tg + \gamma_5 gdp_{t-2} \tag{3}$$

Where tg is the ratio of total tax revenue to GDP and ki is the ratio of investment to GDP.

The result of hausman test for this equation suggests the random effect estimation.

Table 3: results of estimated equation 3

variable	Coefficient	z- value
ki	0.101	4.11
openk	-0.011	3.6
gini	0.111	3.32
tg	0.024	0.55
gdp_{t-2}	0.000005	8.07
cons	4.52	3.02
R- sq: within = 0.34		wald chi2 (5) = 96.05
Between = 0.8		prob> chi2 = 0.000
Overall = 0.71		

The above table shows that investment and inequality significantly promotes economic growth. The negative impact of increasing current expenditures on economic growth is expected in most economies. But, in developing countries, because of inefficient policies and programming and existence of rent seeking, effectiveness of capital expenditures will declines. In developing countries, because of inefficient financial markets income distribution policies may be having negative effect on investment and

growth. The impact of the ratio of total tax to GDP on growth is insignificant. This is because of weakness of tax system in these countries.

Negative coefficient of openness could explain that domestic industries can not compete in international markets. The higher investment ratio to GDP, the higher growth rate is achieved. It seems rational and expected. The negative effect of consumption ratio to GDP on growth is because of the relationship between consumption and saving. It means when consumption increases, saving and investment decreases and hence the growth rate declines. The rise of indirect taxes could affect on inflation and decrease economic growth.

4- Conclusion

In the economic literature, taxes are essential income resources for providing public goods, and income redistribution programs. Also, they have indirect effects on economic growth through income distribution. Some economies like Iran depend on petro-dollars; therefore tax revenues involve a small part of public sources. This paper attempts to analyze relationship between inequality and growth and the role of taxation in effectiveness these macroeconomic variables. Using random effect estimation we find evidence of a positive impact of income inequality on growth. The results from this regression are quit consistent with what has been found in the literature [see Alfranca & Galindo (2003), Barro (1999), Mirrlees (1971), Ruth- Aida (2005) and Rivas (2001)].

In considered economies tax on income, profits and capital lead to increase economic growth rate and income inequality. And international trade tax decreases economic growth rate. The positive relationship between inequality and growth consists with the findings of Barro (1999), Alfranso and Galindo (2003) and Ruth- Aïda, that: Income inequality motivates economic incentives, improving economic growth. Because, if we need saving to improve growth, in absence efficient financial markets, it is necessary to shift income from poor to rich individuals. New investment implies the appearance of sunk costs. Therefore wealth must be concentrated. When the divided benefits from the product are uncertain, the economic against discourage, investment is reduced and economic process is damaged. Hence, wealth concentration is necessary to reduce such

uncertainty. We also find that inflation has a negative effect but, investment has positive effect on growth. This result is expected.

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