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# Macroeconomic Effects of Fiscal Policies: Empirical Evidence from Bangladesh, China, Indonesia and the Philippines

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## ABSTRACT

This paper studies macroeconomic effects of fiscal policies in four Asian countries – Bangladesh, China, Indonesia, and the Philippines – by means of structural macroeconometric model simulations. It is found that short-term fiscal multipliers from an untargeted increase in government expenditure are positive but much less than those from an increased expenditure targeted to capital spending. The multiplier effects from fiscal expansion via a tax rate reduction are found to be typically much less than through higher spending. The effectiveness of automatic stabilizers in general, and more specifically whether expenditure or tax-side stabilizer is more effective, differs across countries.

*Key words:* Fiscal policy, growth, public finance, deficit

*JEL:* E62, E17, C53, P52

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## **1. Introduction**

With the emergence of the European Monetary Union and the growing interest in the possibility of the same for Asia, there is a resurgent interest in the role of fiscal policy as both an expansionary and stabilization tool for government. The 1997 Asian financial crisis, which left some economies in tatters and revived discussions on pump-priming, as well as Japan's protracted experience of near-zero interest rate in a slumping economy – what has been called a liquidity trap – have also highlighted the role that fiscal policy can play. Under a monetary union, stabilizing monetary policy is unavailable to individual countries as a tool to address asymmetric or country-specific shocks. Monetary policy is also pointless in a liquidity trap.

As a result of this resurgent interest, the empirical literature on the topic is growing, employing such tools as structural macroeconomic models and (structural) vector auto regression models (VAR). At present, however, bulk of this literature is still concentrated on OECD and EMU countries, a likely offshoot of the relative abundance of available models for these groups of countries. In contrast, there is little empirical literature on fiscal policy effectiveness for the developing countries of Asia, whereas these countries are interesting for the variety of their growth experiences and the differences in the relative size of their governments.

This paper is an attempt to fill in some of the gap. This paper studies the macroeconomic effects of fiscal policy and automatic stabilizers in four developing Asian countries – Bangladesh, China, Indonesia, and the Philippines – by means of structural macroeconomic model simulations. The main questions we seek to answer for these countries are: How do fiscal policy shocks affect these economies on a macro scale,

specifically how do changes in the fiscal position affect economic growth? What are the transmission channels of the shocks? These include size and the dynamic path of the effects, not only on GDP growth but also on its components. Which kinds of fiscal shocks have the desired property of stabilizing the macroeconomy? Once found, how effective would these automatic stabilizers be in smoothing out large cyclical downturns in these countries?

The paper is organized as follows: Section 2 gives a short review of the relevant literature, as well as describes the method of investigation employed in the paper. Section 3 contains a very short summary of the macroeconomic context, including the fiscal picture, in each of the four countries considered here. Section 4 discusses the simulation results. The last section concludes.

## **2. Review of Literature and Methodology**

Discussions on the effectiveness of fiscal policy may be divided into two strands, the first strand on *discretionary policy* and the second on *automatic stabilizers*.<sup>1</sup> Discussions on discretionary fiscal policy typically focus on *fiscal multipliers*, which may be defined as the percent change in GDP associated with a one percent of GDP increase in the budget deficit (also known as a fiscal expansion). Discussions on automatic stabilizers typically center on their ability to dampen business cycles.

Empirical studies on fiscal multipliers can be classified into two: those employing the VAR methodology and those utilizing structural macroeconometric models. Examples of

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<sup>1</sup> Formally defined, discretionary policy is the deliberate manipulation of government purchases, transfers and taxation in the pursuit of macroeconomic goals such as growth and full employment. Automatic stabilizers are cyclically induced changes of government spending and taxes, which tend to stabilize aggregate output.

recent VAR-based studies include (Blanchard and Perroti, 1999), (Fatas and Mihov, 2001), and (Mountford and Uhlig, 2002). For recent studies that employ structural models, see (Roeger and In't Veld, 2002), (Barrell and te Vede, 2002), (Barrell *et al*, 2004), and (Hunt and Laxton, 2003).

Most of these studies find that the fiscal multipliers are positive but small in the short run and diminish to zero in the long run due to crowding out effects. Estimates presented in (Capet, 2004) for the short-term multipliers range from 0.6 to 1.3 across countries in Europe. Barrell *et al* (2004) find that these multipliers are typically not dependent upon whether consumers exhibit forward-looking behavior. Al-Eyd *et al* (2004) find that the greater the proportion of liquidity-constrained households there are in an economy, the larger the fiscal multipliers. They also find that if classified by source of expansion, the spending multiplier is usually larger than the tax multiplier. The opposite is, however, found by Mountford and Uhlig (2002) using the VAR methodology. They obtain a multiplier of 2 for a (surprise) deficit-financed tax cut as compared to a deficit spending multiplier of only 0.5.

Discretionary fiscal policy is often criticized for the very long lag normally involved in implementing such policy, especially in comparison to the implementation of monetary policy. Significant changes in government spending have to undergo protracted bureaucratic processes such as legislative approval in most circumstances. Under this reasoning, the only feasible kind of fiscal policies are automatic stabilizers, which are cyclically-induced, and the only criterion on which such policies are to be judged is their ability to dampen business cycles, e.g. see (Zagler and Dürnecker, 2003). The effectiveness of such policies, however, are found to depend also on the fiscal multiplier,

with the higher the multiplier the better the smoothing power of the automatic stabilizers (Scharnagl and Tödter, 2004). Al-Eyd *et al* (2004) find fiscal stabilizers to be generally weak, as a result of typically small multipliers. Auerbach and Feenberg (2000) estimate the effect of automatic tax stabilizers to be as much as 8% of any initial shock to GDP.

In this paper, we use structural macroeconometric model simulations for each of Bangladesh, China, Indonesia, and the Philippines to measure fiscal policy effectiveness. We do it for (a) *discretionary policy*, where effectiveness is measured by the size of the multipliers, and (b) *automatic stabilizers*, where we measure effectiveness by the magnitude of an exogenous shock that fiscal policy can smooth out. The four macroeconometric models are recently developed at the Asian Development Bank (ADB) using quarterly time-series data. The models vary in size from about 60 to 90 equations. Each model is divided into eight blocks: income and consumption, labor and employment, investment, government, foreign trade, the three sectors of GDP, price and wage, and monetary blocks, see (Cagas *et al*, 2006) and (Qin *et al*, 2006) for the detailed description of the Philippine and China models respectively.

In brief, the four models share the following properties: The behavioral equations are econometrically estimated following the so-called LSE dynamic-specification approach, see e.g. (Hendry 1995; 2002), with certain long-run parameters imposed for theoretical consistency. Constancy of all parameter estimates is checked via recursive estimations and use of dummy variables is kept at minimum. The models exhibit good within-sample and out-of-sample forecasting ability as gauged, respectively, by small root mean square percentage error and relatively narrow band of forecasts based on stochastic simulations.

The designs of the policy simulations are described below.

(a) Discretionary Policy Simulations

For each country, two types of shock simulations – impulse shock and step shock – are carried out for three variations of fiscal expansion. An impulse shock refers to a one-year shock (2006), whereas a step shock refers to a shock up to the end of the simulation period (2006-2010).

The first two variations, henceforth referred to as *Expenditure 1* and *Expenditure 2*, involve fiscal expansion through an increase in government spending equivalent to one percent of GDP.<sup>2</sup> The difference in the two is in the allocation of the spending between current and capital expenditures. In *Expenditure 1*, the additional spending is assumed to follow the allocation in the most recently observed period. In *Expenditure 2*, all the additional spending is assumed to go to capital expenditures.<sup>3</sup> In the last variation, henceforth called as *Tax*, the fiscal expansion is through a reduction in the tax rate equivalent to about 1% of GDP while keeping spending fixed at the baseline level for the shock period.

In the case of impulse shocks, both the short-term and medium-term effects are measured, where short-term effect refers to the average effect for the two-year period covering the year of the shock and the year immediately after (2006-2007), and medium-term effect refers to the average effect for the period 2008-2010. In the case of step shocks, only the medium-term impacts are calculated as the short-term effect would not differ much from that of the first case. The impacts on concerned variables are shown in terms of percent changes in the levels of those variables.

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<sup>2</sup> Operationally, it is one percent of GDP of the previous quarter.

<sup>3</sup> This is to allow for endogenous growth model type effects, where a distinction is drawn between productive and non-productive expenditures, e.g. see (Barro, 1990), (Zagler and Dürnecker, 2003).

(b) Automatic Stabilizer Simulations

In order to measure the effectiveness of automatic stabilizers, we use the tool of alternative equations for the relevant government variables.<sup>4</sup> Two stabilizers are simulated: one on the government expenditure and another on the tax revenues. For the expenditure stabilizer, we re-specify the expenditure equation for the simulation period to indicate an automatic increase (reduction) in total government expenditure as a result of a decline (increase) in GDP growth. For the tax stabilizer, on the other hand, we re-specify the tax equation so that the tax rate automatically falls (rises) when GDP growth falls. In both cases, the magnitude of the change in the relevant fiscal tool is assumed proportional to the decline in GDP. Next, we simulate separately three exogenous demand shock scenarios on GDP – a negative shock in the amount of 5% of GDP for one year (2006): i) via consumption; ii) via investment; iii) via exports. The effectiveness of expenditure and tax stabilizers is measured by comparing the benchmark scenario in which the alternatively specified equations of the automatic stabilizers are deactivated to where they are activated.

Following (Scharnagl and Tödter, 2004), let  $\Delta y$  be the difference in *GDP without demand shock* and *GDP with shock and with the stabilizer deactivated*; let  $\Delta y_s$  be the difference in *GDP without shock* and *GDP with shock but with stabilizer activated*. The effectiveness of a stabilizer can then be defined as:

$$(1) \quad stab_y = \frac{\Delta y - \Delta y_s}{\Delta y}$$

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<sup>4</sup> The models are simulated using WinSolve, see (Pierse, 2001). The software allows for alternative formulations of the same structural equation, which can be deactivated in default forecasting.

A value of unity indicates complete smoothing  $\Delta y_s = 0$ , whereas a value of zero indicates no smoothing at all  $\Delta y = \Delta y_s$ , and a negative figure indicates a deterioration instead of a smoothing effect  $\Delta y < \Delta y_s$ .

An alternative measure of the effectiveness is through a comparison of the shock-induced output variances between the cases of activated versus deactivated automatic stabilizers. Specifically, let  $\sigma$  be the standard deviation of *GDP with shock and with the stabilizer deactivated* and let  $\sigma_s$  be the difference in *GDP with shock and with stabilizer activated*. We then have:

$$(2) \quad stab_\sigma = \frac{\sigma - \sigma_s}{\sigma}$$

As in (1), a value of unity indicates complete smoothing  $\sigma_s = 0$ , whereas a value of zero indicates no smoothing at all  $\sigma = \sigma_s$ , and a negative value indicates an increase in output variability  $\sigma < \sigma_s$ .

In the context of our experiments, where we assume a relatively large negative demand shock on output, (1) appears to be the more relevant than (2) as the definition of smoothing out. We want our stabilizer to, as much as possible, push GDP back up to its previous level before the shock, which implies a value for (1) close to unity. In contrast, a positive value for (2) is consistent with GDP at much lower levels than before the shock, as it is only concerned with variability.

### 3. Macroeconomic Context

The four countries considered here vary in terms of macroeconomic experiences as well as in terms of the size and activity of the government. Indonesia and the Philippines

have been heavily affected by the Asian crisis, whereas Bangladesh and China have hardly been affected. Bangladesh has been growing at a consistent pace of around 5% since the 1990s (Table 3.1). China has been growing at around 10% annually for the last one and half decades. Indonesia suffered a massive double-digit decline in output at the height of the crisis but has since recovered and has been growing at a rate 4-5% since then. The growth of the Philippines has been boom and bust, enduring near-zero growth during the Asian crisis and averaging a low growth of 2.8% annually for the 1990s as a whole, and again suffering a huge decline in output growth in 2001 as a result of a political crisis. In between and recently, its economic growth has been hovering between 4-6% per annum.

In terms of the size of government consumption, China is the largest and Bangladesh the smallest of the four countries, see Figure 3.1. The share of government consumption to GDP is around 11% in China, 8% in Indonesia and the Philippines, and only 4% in Bangladesh. One may wish to add government investment in this consideration, which is around 3% of GDP in China, 3% in Indonesia (but was about 7-9% pre-crisis), and 6-7% in Bangladesh.<sup>5</sup>

The four countries have had histories of incurring fiscal deficits, as shown in Figure 3.2. The fiscal deficit as a percentage of GDP has been largest in the Philippines, where in the last six years it has averaged more than 4%, followed by Bangladesh, where the deficit ratio has averaged more than 3% in the same period. In China and Indonesia, the fiscal deficit ratio has been around 2% in this decade.

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<sup>5</sup> In the Philippine national income accounts data, investment data is not disaggregated between the contributions of the private sector and government.

In both Bangladesh and the Philippines, contributing to the deficit and high debt levels are the low household saving rates, as well as the losses incurred by state-owned enterprises. China has a very active fiscal policy, resulting partly from its fixed exchange rate which constrains its use of monetary policy. In recent years, it has tried to scale back fiscal stimulus by curbing infrastructure programs and limiting the deficit to about 2% of GDP. Most of Indonesia's fiscal problems stem from the Asian crisis, which left the Indonesian government saddled with a huge amount of debt, primarily due to the recapitalization of the failed banking system. As is true also for the Philippines, the depreciation of its currency during the crisis raised substantially the burden of servicing its external debt. In recent years, as its economy has recovered, Indonesia's fiscal position has also been improving. The Philippines has recently instituted tax reforms that seek to address its precarious fiscal position.<sup>6</sup>

#### **4. Empirical Results**

##### **4.1 Discretionary fiscal policy**

Tables 4.1 and 4.2 report the results of a one-year (impulse) fiscal expansion shock for the short and medium terms, respectively.<sup>7</sup> Table 4.3 presents the results over the medium term of a permanent (step) fiscal expansion shock.

In the case of an untargeted *impulse* fiscal spending shock (*Exp 1*), the short-term GDP multipliers for the four countries range from 0.22 to 0.40, with the highest observed in Bangladesh. There is some evidence that Bangladesh has a much higher level of

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<sup>6</sup> For more description of the fiscal position of the Philippines, see the recent study by Qin, Cagas, Ducanes, Magtibay-Ramos and Quising (2006).

<sup>7</sup> The shocks are applied in each of the four quarters of 2006. Because many variables adjust only after some lag, the short-term was defined to cover not only the year of the shock but also the year immediately after, or 2006-7. In other words, the short-term effect is the average effect over the two-

liquidity constraint relative to the other three countries, see (Godquin and Sharma, 2005), and this may account for its higher short-term multiplier, see (Al-Eyd *et al*, 2004). A fiscal expansion targeted to capital formation (*Exp 2*) has significantly higher multipliers of 0.74 for the Philippines, 0.76 for Indonesia, 0.79 for Bangladesh, and 1.57 for China. The very large value for China is consistent with recent finding in (Qin, Cagas, He and Quising, 2006) that government budgetary investment plays a key role in encouraging investment fever in China. The short-term multipliers of a fiscal expansion through tax reduction (*Tax*) vary more widely, from a low 0.03 for the Philippines to a high of 0.44 for China.

In general, the results are consistent with the postulate that the spending multiplier is higher if targeted to productive expenditures such as investment, e.g. see (Barro, 1990), and (Zagler and Dürnecker, 2003). They also conform to the findings for other countries that the spending multiplier is typically larger than the tax multiplier, e.g. see (Capet, 2004).

Over the medium term (Table 4.2), for untargeted spending, there is complete or near-complete crowding out for Bangladesh, Indonesia and the Philippines, whereas in China the multiplier is actually higher than in the short term. For targeted spending, the multiplier is the highest for China, followed by the Philippines and then Indonesia and Bangladesh, with the last case being negative but almost insignificant. The case for China is within expectation. In the case of the Philippines, the country has been starved for investment and the economy as whole is seen to benefit significantly from a greater level

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year period. The medium term was defined to cover the period 2008-2010, and the medium-term effect is the average effect over the three-year period.

of capital expenditure by the government (Paderanga, 2001).<sup>8</sup> In the case of Bangladesh, there is a serious concern about the quality of public capital expenditure. A large proportion of what is reported as capital expenditures is actually recurrent expenditure, and hence should not be considered as investment. Furthermore, it has been argued that weak governance significantly reduces the efficacy of capital expenditures in the country (World Bank and ADB, 2003; CPD, 1997). In the medium-term, the multiplier of a tax reduction declines to very low levels for Bangladesh, China, and Indonesia, and rises, but only slightly, for the Philippines.

Figures 4.1 to 4.4 show the impact of the fiscal expansion on the major components of GDP as well as on inflation for each of the four countries over the duration of the simulation period. The figures show that in general, the short-run positive impact of higher fiscal spending, whether targeted or not, occurs mainly through investment on the demand side and the second sector output on the supply side. On the other hand, a tax reduction affects output primarily through private consumption and the tertiary sector output. It is worth noting from Figure 4.2 that while targeted fiscal expansion raises China's output markedly, it also raises inflation significantly – by about 4% at the end of the simulation period. This reflects from another angle the earlier point that increasing government investment encourages overinvestment in China. Such a significant inflationary impact is not observed in the other countries, indicating that government-led investment is still far from saturated in these countries.

In the case of *step* shocks, Table 4.3 shows that, other than in China, the untargeted spending multiplier and the tax multiplier are less than unity. On the other hand, the

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<sup>8</sup> The share of capital expenditures in total expenditures has declined precipitously over the past two decades for the Philippines, from about a quarter of the total in the 1980s to single-digit levels in recent

targeted spending multiplier is very high, particularly for China and the Philippines. Figures 4.5 to 4.8 show the dynamic effect on the major components of GDP and on inflation as well for each of the four countries. Again, it is worth noting that in the case of China, the additional growth puts a lot of strain on inflation, to the tune of an additional 11% by the end of the simulation period and rising.

#### 4.2. Automatic stabilizers

Tables 4.4 and 4.5 report the smoothing power of automatic stabilizers at the spending and taxation sides, respectively. Since we assume in Section 2 that the shock originates from a demand-side decline in output, the stabilizers in our simulations respond (at least initially) through either an increase in government spending or a tax reduction.

The smoothing power of expenditure-side automatic stabilizer appears weak and ineffectual in Bangladesh and Indonesia. In the case of Bangladesh, using (1), only 1% of the consumption shock is smoothed out, while the investment and export shocks are not smoothed out at all. For Indonesia, no smoothing out occurs for any of the shocks. In contrast, the expenditure-side stabilizer appears highly effective in China, where it smoothes out about 7-8% of all three types of demand shocks, which is comparable to the estimates of Auerbach and Feenberg (2000) for the US. In the case of the Philippines, this stabilizer is effective for consumption and investment shocks (even as measured by (2)), but not for the export shock.

In the case of the tax-side automatic stabilizer, Table 4.5 indicates that it is potentially only effective for Indonesia, where it is able to smooth out consumption and export

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years. This is taken to indicate a serious under-spending in physical infrastructure (Paderanga, 2001).

shocks (also even under (2)). It has a marginal impact for Bangladesh across shock categories; it does not smooth out at all for China and the Philippines.

In summary, the expenditure-side automatic stabilizer appears to be relatively effective for China and the Philippines but ineffective for Bangladesh and Indonesia. On the other hand, a tax-side automatic stabilizer is effective for Indonesia. Unfortunately, neither side of the automatic stabilizers appears to be effective for Bangladesh.

A caveat must be noted here: the designed automatic stabilizers are highly aggregate since the models we have do not contain disaggregate equations explaining different tax categories or specific spending categories. Al-Eyd *et al* (2004) and Brunila *et al* (2002), for instance, show that the effect of automatic stabilizers depends on the disaggregate structure of taxes.

## **5. Conclusion**

This paper examines empirically the effectiveness of fiscal policy in four countries of Asia – Bangladesh, China, Indonesia, and the Philippines – using structural macroeconometric model simulations. Fiscal policy is divided into a) discretionary policy and b) automatic stabilizers. For discretionary policy, the effectiveness is evaluated on the basis of the sizes of the short-term and medium-term multipliers under three scenarios: i) untargeted government spending increase, ii) investment-targeted government spending increase, and iii) and tax reduction.

In the case of an impulse shock of untargeted spending, the short-term multipliers are found to be positive but way below unity for each of the four countries. The multipliers are much higher in the case of targeted increases, especially for China. The multipliers from a tax reduction are generally lower than the spending multipliers except in the case

of China against untargeted spending. Over the medium term, the multiplier impact of a fiscal impulse shock dies out, except in the targeted spending scenario for China and the Philippines.

For automatic stabilizers, they are classified into two types: one that works on the expenditure side, and the other through the tax side. We find that, at least for China, Indonesia, and the Philippines, automatic stabilizers are effective in smoothing out some of the effects of a large demand shock. The results also indicate that an expenditure-side automatic stabilizer is more effective for China and the Philippines, while a tax-side stabilizer is more effective for Indonesia.

Finally, putting the results together, increased fiscal spending is found to be an effective expansionary and stabilizing tool for China and the Philippines, with the qualification that, for the former, it is also inflationary. On the other hand, increased fiscal spending is only expansionary but not stabilizing in Indonesia and Bangladesh. Meanwhile, tax reduction is found to be generally a less effective expansionary tool and is stabilizing only in the case of Indonesia.

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**Table 3.1. GDP Growth Rate: Bangladesh, China, Indonesia, and the Philippines; 1990-2005 (in percent)**

<b>Country</b>	<b>1990-1999</b> (Average)	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Bangladesh	4.8	5.9	5.3	4.4	5.3	6.3	5.4
China	10.0	8.4	8.3	9.1	10.0	10.1	9.9
Indonesia	4.3	4.9	3.8	4.4	4.9	5.1	5.6
Philippines	2.8	4.4	1.8	4.4	4.5	6.0	5.1

**Table 4.1. Short-term fiscal multipliers: the impact on GDP of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**

<b>Country</b>	<b>Exp 1</b>	<b>Exp 2</b>	<b>Tax</b>
Bangladesh	0.40	0.79	0.13
China	0.29	1.57	0.44
Indonesia	0.22	0.76	0.16
Philippines	0.27	0.74	0.03

Note: Short-term is defined as year contemporaneous with the shock and the year after, i.e. (2006-7).

**Table 4.2. Medium-term fiscal multipliers: the impact on GDP of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**

<b>Country</b>	<b>Exp 1</b>	<b>Exp 2</b>	<b>Tax</b>
Bangladesh	-0.05	-0.02	-0.05
China	0.59	3.83	0.06
Indonesia	0.02	0.19	-0.03
Philippines	0.00	1.36	0.09

Note: Medium-term is defined as the period from 2008-10.

**Table 4.3. Medium-term fiscal multipliers: the impact on GDP of a permanent increase (decrease) in government expenditure (tax) by 1% of GDP**

Country	Exp 1	Exp 2	Tax
Bangladesh	0.74	2.07	0.16
China	1.91	12.87	1.03
Indonesia	0.59	2.13	0.61
Philippines	0.55	4.47	0.27

Note: Medium-term is defined as the period from 2008-10.

**Table 4.4. Effectiveness of Automatic Stabilizers: Expenditure Adjustment**

Shock to	Bangladesh	China	Indonesia	Philippines
Consumption	0.01	0.07	-0.05	0.04
	<i>-0.01</i>	<i>-0.06</i>	<i>0.24</i>	<i>0.09</i>
Investment	-0.04	0.08	-0.12	0.05
	<i>-0.02</i>	<i>-0.06</i>	<i>0.25</i>	<i>0.05</i>
Exports	-0.04	0.08	-0.05	-0.03
	<i>-0.02</i>	<i>-0.06</i>	<i>0.23</i>	<i>0.03</i>

Notes:

- The upper figures correspond to smoothing as defined in Eq. (1) in Section 2. The italicized lower figures correspond to smoothing as defined in Eq. (2).
- The smoothing power is measured for the period of the shock and the year immediately after (2006-7).

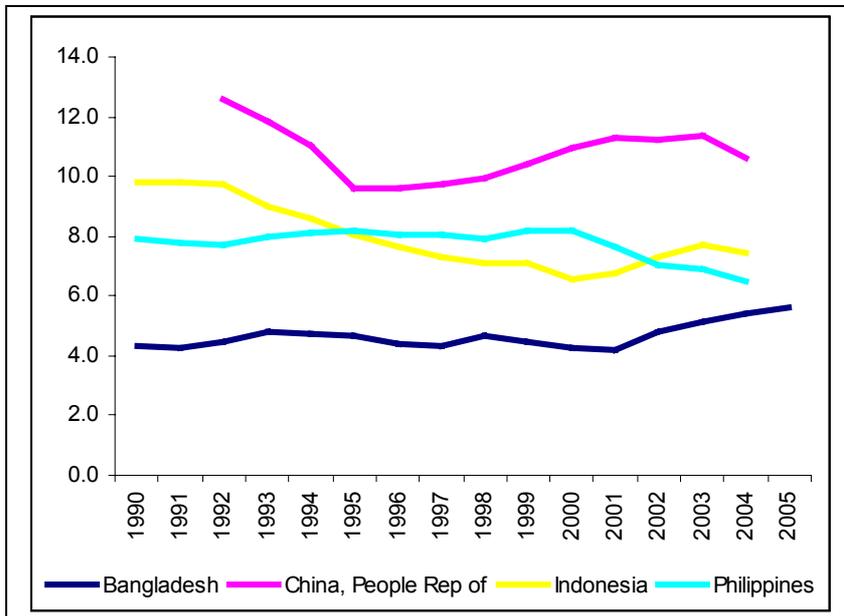
**Table 4.5. Effectiveness of Automatic Stabilizers: Tax Adjustment**

Shock to	Bangladesh	China	Indonesia	Philippines
Consumption	0.00	-0.01	0.04	-0.04
	<i>0.00</i>	<i>0.01</i>	<i>0.15</i>	<i>0.01</i>
Investment	0.01	-0.01	-0.02	-0.03
	<i>0.00</i>	<i>0.01</i>	<i>0.16</i>	<i>0.02</i>
Exports	0.01	-0.02	0.04	-0.08
	<i>0.00</i>	<i>0.01</i>	<i>0.14</i>	<i>0.03</i>

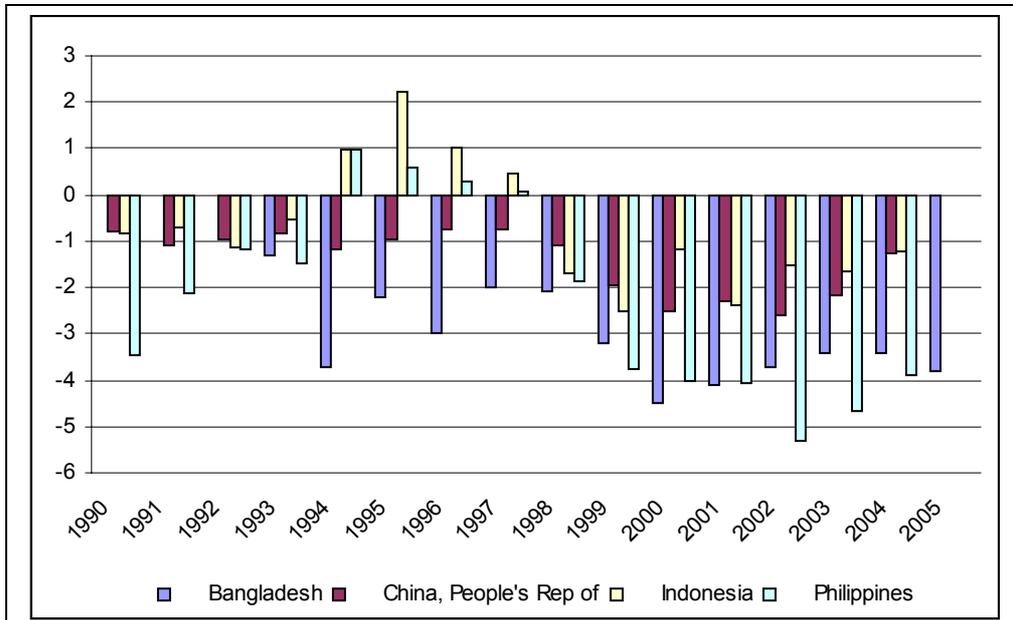
Notes:

- The upper figures correspond to smoothing as defined in Eq. (1) in Section 2. The italicized lower figures correspond to smoothing as defined in Eq. (2).
- The smoothing power is measured for the period of the shock and the year immediately after (2006-7).

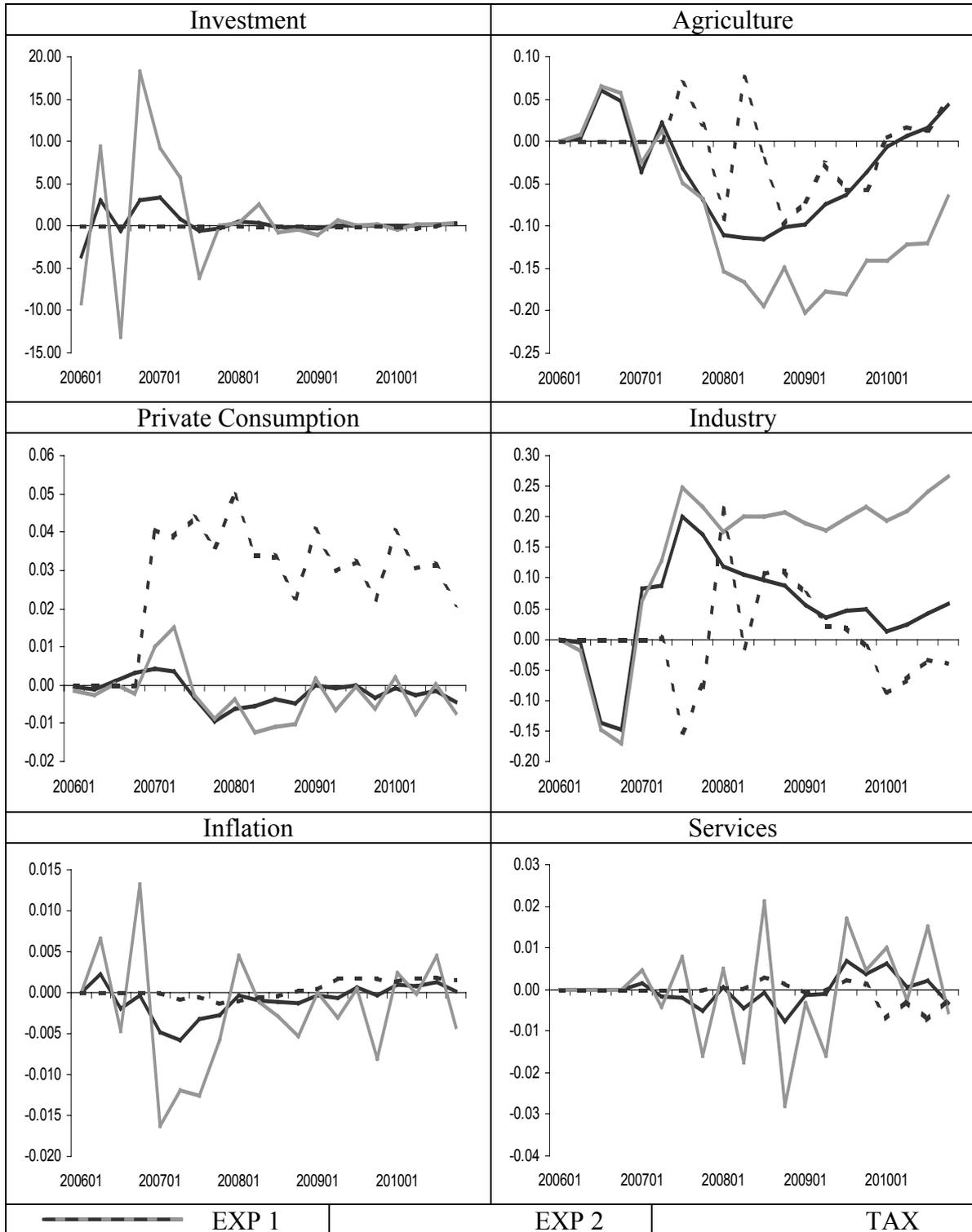
**Figure 3.1. % Share of Government Consumption in GDP**



**Figure 3.2. Fiscal Balance as a % of GDP, 1990-2005**

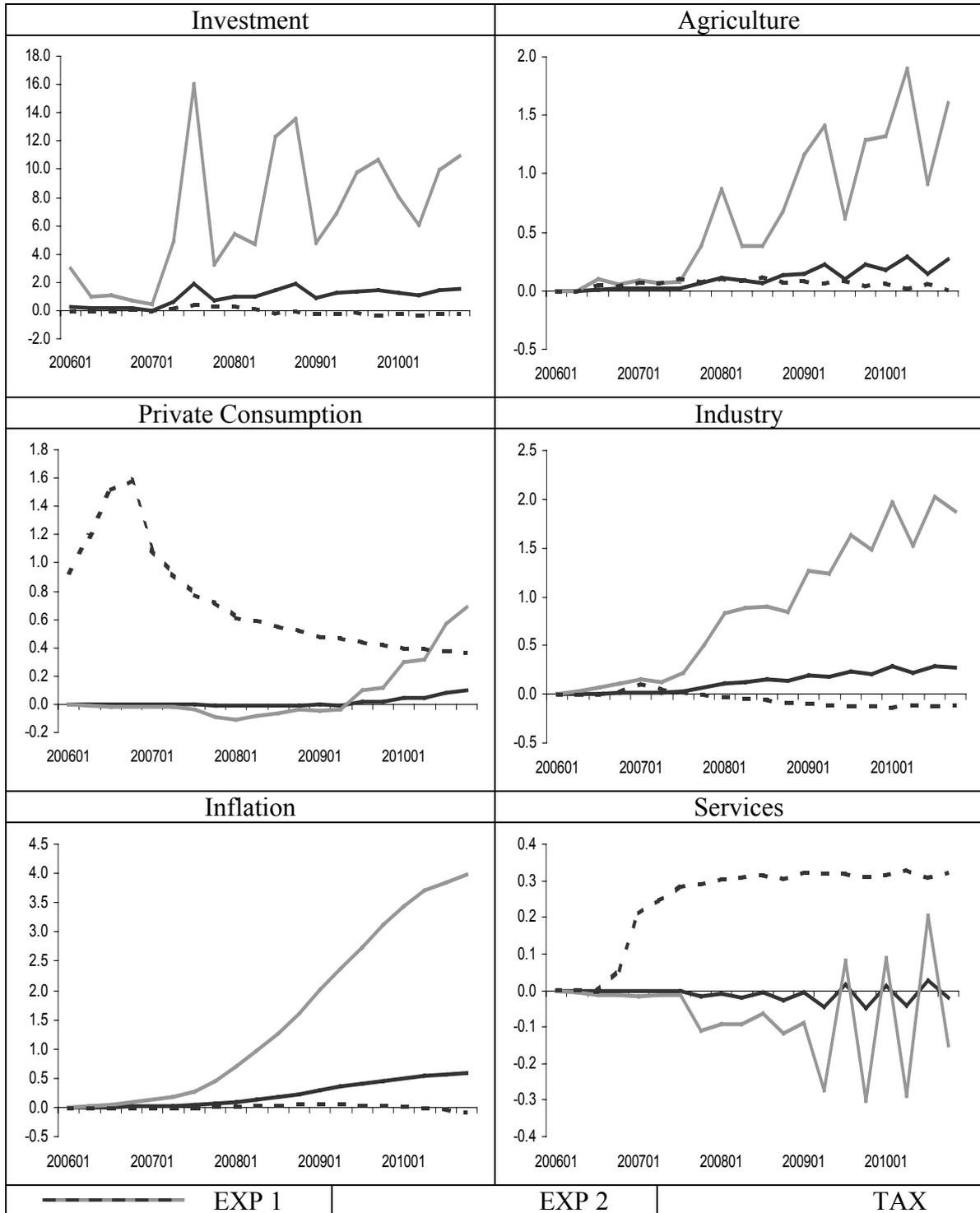


**Figure 4.1. Bangladesh: the impact on GDP components and inflation of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**



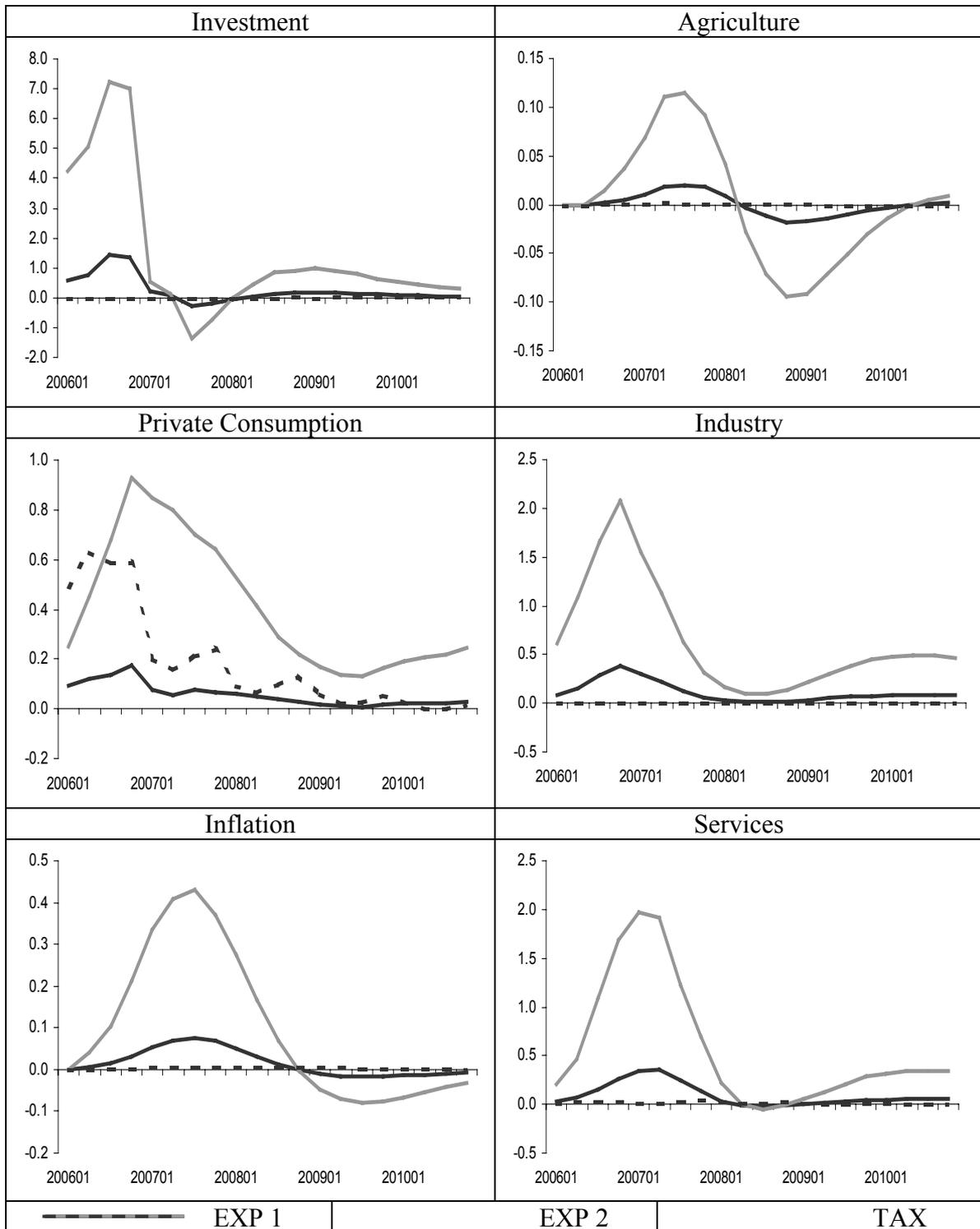
Note: Figures are in percent changes in own variables.

**Figure 4.2. China: the impact on GDP components and inflation of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**



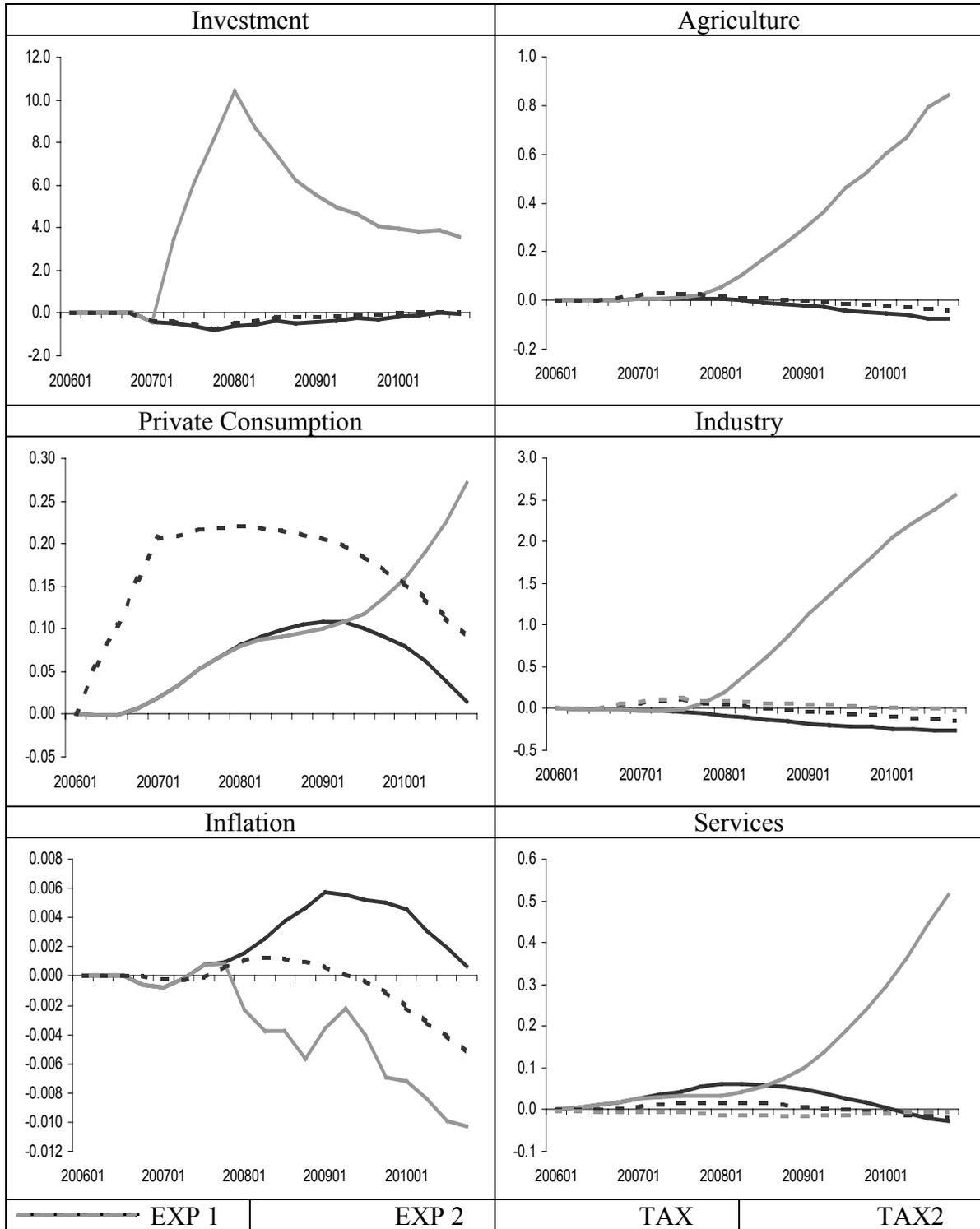
Note: Figures are in percent changes in own variables.

**Figure 4.3. Indonesia: the impact on GDP components and inflation of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**



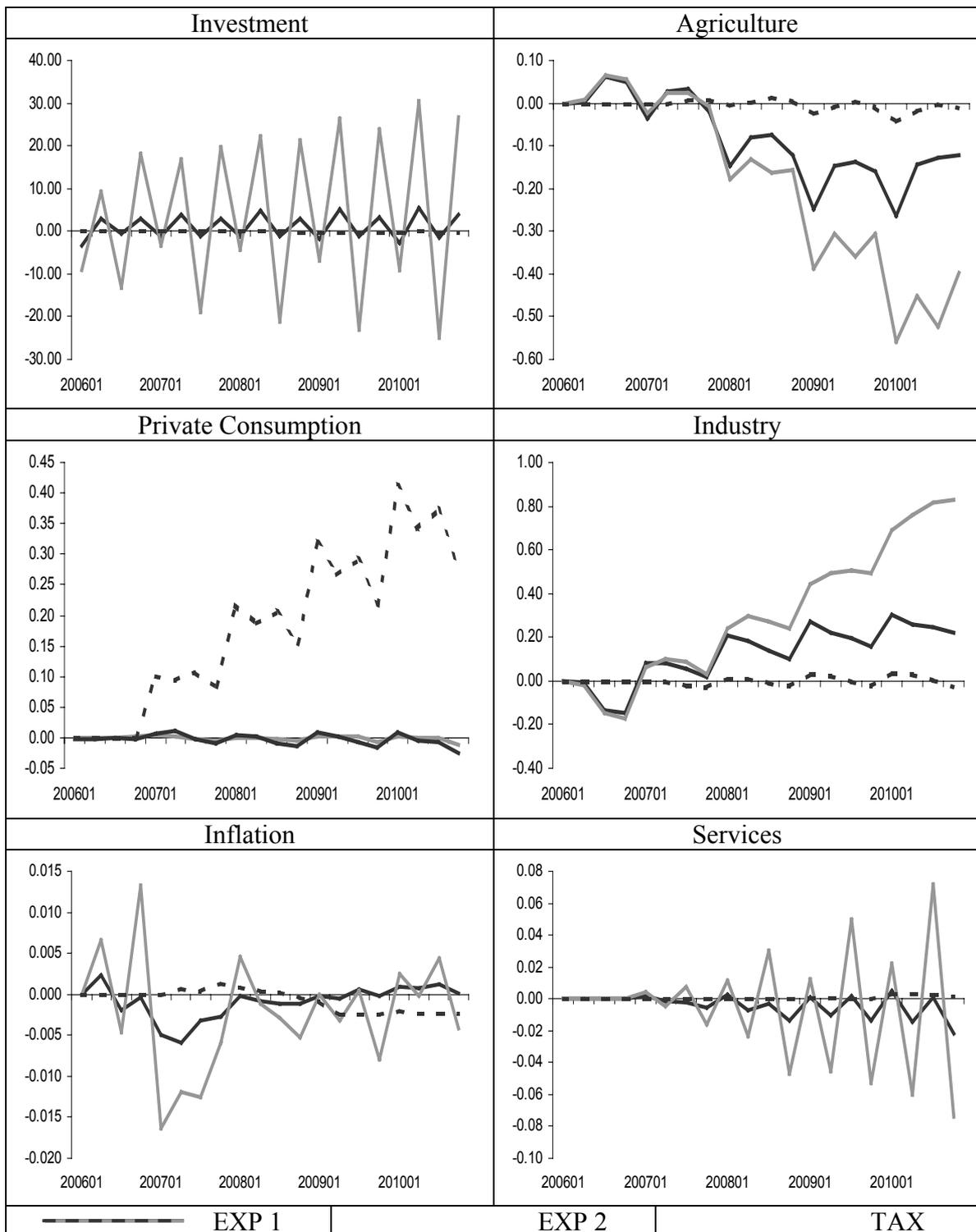
Note: Figures are in percent changes in own variables.

**Figure 4.4. Philippines: the impact on GDP components and inflation of an increase (decrease) in government expenditure (tax) by 1% of GDP for one year**



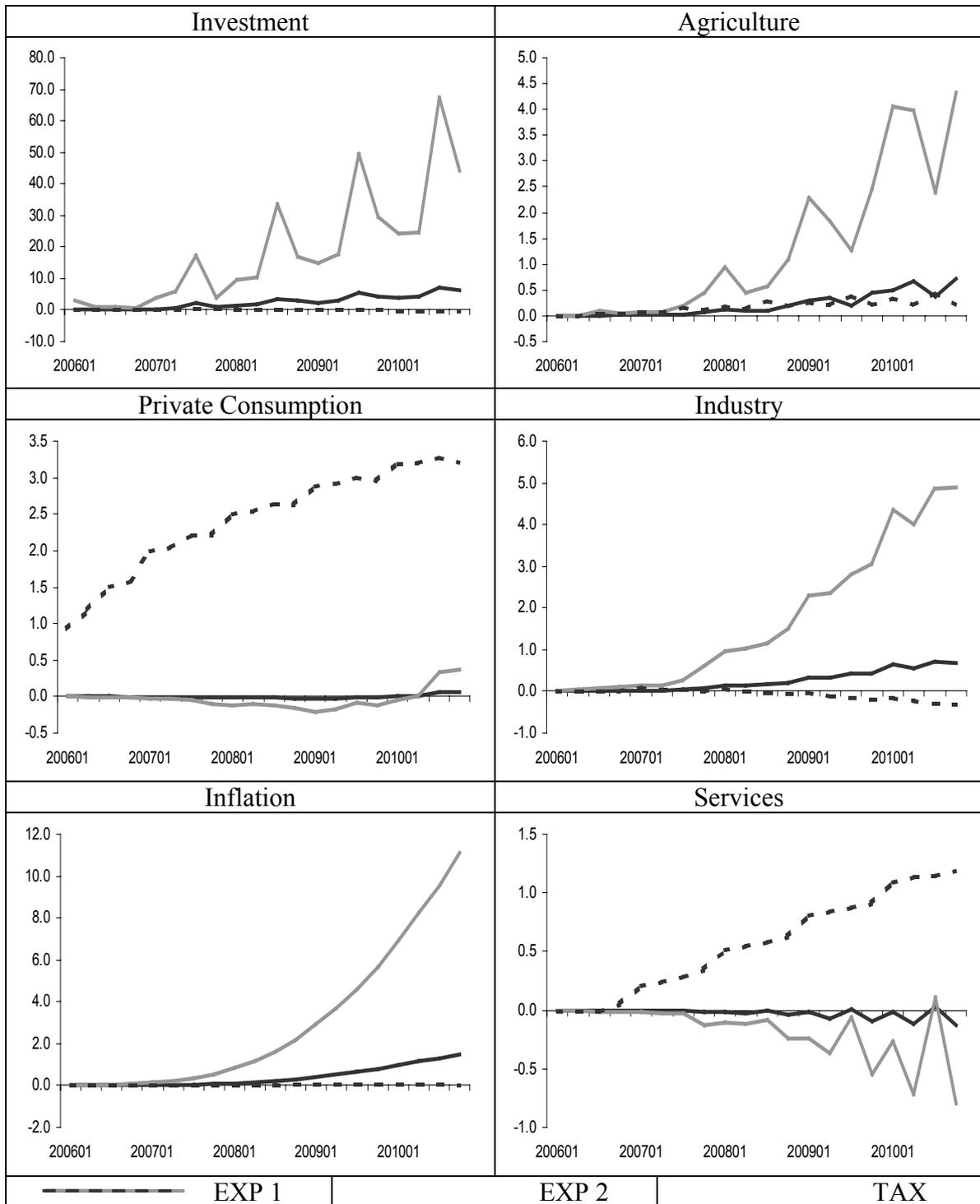
Note: Figures are in percent changes in own variables.

**Figure 4.5. Bangladesh: the impact on GDP components and inflation of a permanent increase (decrease) in government expenditure (tax) by 1% of GDP**



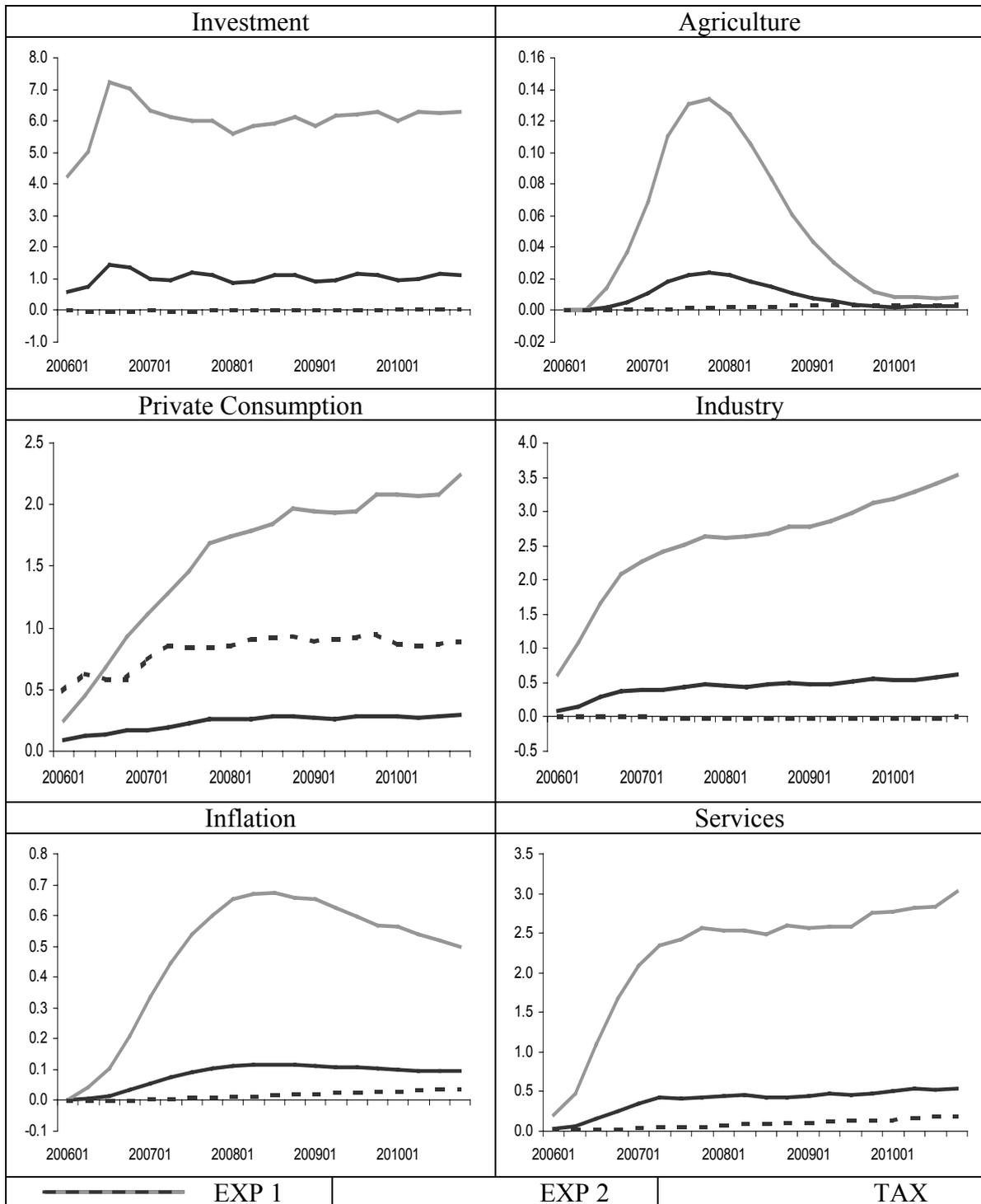
Note: Figures are in percent changes in own variables.

**Figure 4.6. China: the impact on GDP components and inflation of a permanent increase (decrease) in government expenditure (tax) by 1% of GDP**



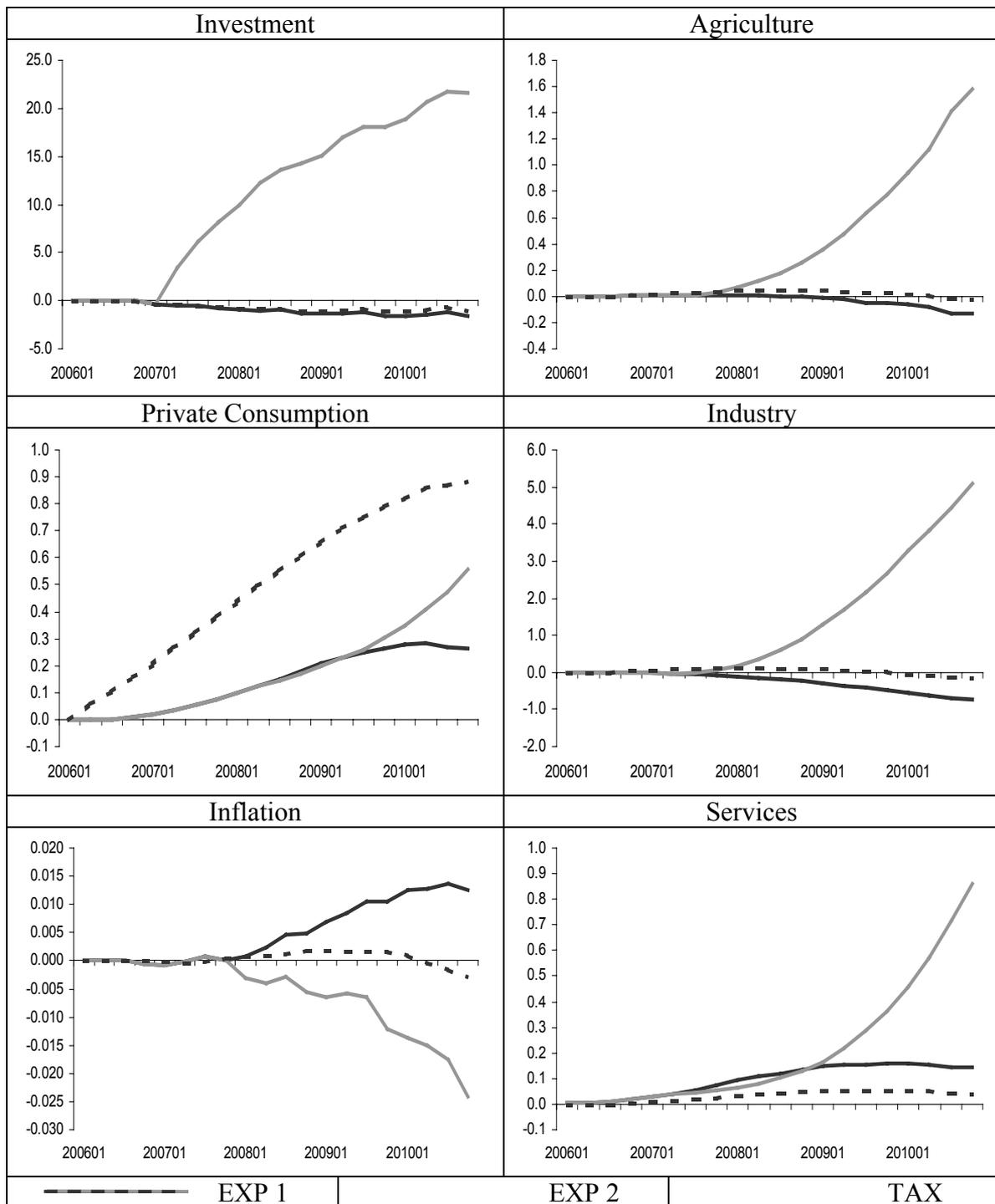
Note: Figures are in percent changes in own variables.

**Figure 4.7. Indonesia: the impact on GDP components and inflation of a permanent increase (decrease) in government expenditure (tax) by 1% of GDP**



Note: Figures are in percent changes in own variables.

**Figure 4.8. Philippines: the impact on GDP components and inflation of a permanent increase (decrease) in government expenditure (tax) by 1% of GDP**



Note: Figures are in percent changes in own variables.

**This working paper has been produced by  
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