

The growing current account surpluses in East Asia: the effect of dark matter assets

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I. Introduction

Economists pay attention to the current account as a way of keeping track of the change in net foreign assets for any given country over time. Large deficits signal that a country is running up its foreign liabilities. If the countries experiencing such imbalances are themselves large, the resulting “global imbalances” may require major changes throughout the whole international financial system. In fact, the current state of affairs, with large measured imbalances in the US as it runs current account deficit of 6.5% of GDP in 2006, has been a source of concern for a large number of academics and analysts.

It is well known that the US economy has been running increasingly large current account deficits since the early 1980s. Current account deficits signal an economy that is spending beyond its means, so it comes as no surprise that the accumulation of deficits during this period, adding up to 5.27 trillion dollars between 1982 and 2005, have significantly increased US net foreign debt. If those trends were not in themselves cause for concern, in recent years the deficits have escalated in both nominal value and as a percentage of GDP suggesting that the process cannot continue much longer and that a large and painful reversal may be near.

In a series of articles Hausmann and Sturzenegger (2005, 2006, 2007a, 2007b) (HS, 2005, 2006, 2007a, 2007b hence), we have argued that, in some cases, this logic, that relates current account deficits so naturally with net external payments, can fail. We use the case of the US to explain why. The Bureau of Economic Analysis (BEA) indicates that in 1980 the US had about 365 billion dollars of net foreign assets (that is the difference between the foreign assets owned abroad and the local assets owned by foreigners). These assets rendered a net return of about 30 billion dollars. Between 1980 and 2004, the US accumulated a current account deficit of 4.5 trillion dollars. You would expect the net foreign assets of the US to fall by that amount, to say, minus 4.1 trillion. If it paid 5 percent on that debt, the net return on its financial position should have moved from a surplus of 30 billion in 1982 to minus 210 billion dollars a year in 2004. But the truth is that by 2004 the payments had remained virtually unchanged. Between 2004 and 2006 the situation has become even more anomalous. 2005 and 2006 saw unprecedented current

account deficits, while net income remained positive and stable. So, how can the difference be reconciled? Paraphrasing Bill Cline (2005) we asked in our work if it made sense to call a country that makes money on its net foreign position a debtor. The question we raised in our studies was whether there were hidden assets or services provided by the US economy, -the size of which had increased steadily over recent decades-, explaining why the net income flow had remained stable in spite of the increase in measured debt. We proposed to measure real assets as the capitalized value of net investment income and we called the difference between this measure and official measures of net foreign assets “dark matter”. In the case of the US the example above suggests that the US has a large quantity of “dark matter assets”.

In HS (2007b) we expanded our analysis to the whole set of countries in order to compute dark matter for all countries for which data was available but we did not focus on any region specifically. As we will argue below, there are significant reasons why dark matter dynamics may alter significantly the assessment of external results for the East Asian region. This paper attempts to explain why and to measure the effects¹.

The paper is organized as follows. In the following section, we will first explain the definition and meaning of dark matter. Then, in section III, we will look at the past trends of net foreign asset position and current account using the dark matter in East Asia as a region. Section IV looks individually at each country. For the purpose of our analyses, and based on the data availability, we focus on the following ASEAN+3 countries: Japan, China, Korea (+3), Thailand, Indonesia, Malaysia, Singapore, the Philippines, Laos, Cambodia, Vietnam and Myanmar². Section V concludes with policy implications.

II. Definition of Dark Matter and Current Account Deficits

Let us first briefly clarify the meaning of dark matter. As mentioned above our motivating fact is that net income from foreign assets seems to be poorly accounted by the change in foreign assets obtained from accumulating the current account or from direct measures of the stock of net foreign assets that some countries estimate. Thus, we propose an alternative way of measuring the current account, one that starts by defining the stock of net foreign assets (*NFA*) as the capitalized value of the net investment income (*NI*), discounted at a constant rate of interest (*r*):

$$NFA_t^{DM} = \frac{NI_t}{r} \quad (1)$$

The superscript *DM* corresponds to *dark matter*, a term that we have chosen to reflect the discrepancy between our measure of net foreign assets and the measure that can be obtained from official figures or from accumulating the current account imbalances. The name is taken from a term used in physics to account for the fact that the world is more stable than you would think if it were held together only by the gravity emanating from visible matter. In the same way that physicists infer matter in the world from its gravitational pull, and not from adding up the visible matter, we infer the assets from their returns, and not from adding the current account

¹ HS (2007c) looked specifically at the Latin American case, and found that while official current account dynamics capture reasonably well the evolution of net foreign assets in the region as a whole, they massively underestimate current account imbalances for commodity producers that have experienced significant capital losses as a result of the recent commodity boom. It also found that official numbers typically overestimate the current account deficits of those countries that have benefited from debt relief, as official numbers miss the capital gain associated to debt forgiveness. Overall, the analysis concluded that while in recent years statistics showed a current account surplus for the region, once dark matter was taken into account the region exhibited a deficit.

² The only missing country is Brunei.

imbalances. As a result countries with net investment income larger than what is presumed on the basis of their asset base will have dark matter assets, while countries where the net investment income is too low will have dark matter liabilities.

In turn, we define the current account as the change in net foreign assets defined in (1):

$$CA_t = NFA_t^{DM} - NFA_{t-1}^{DM} = \frac{NII_t - NII_{t-1}}{r}. \quad (2)$$

This way of computing the current account has been suggested by Cline (2005) and previously by Ulan and Dewald (1989). It was discussed by US government officials, but the Bureau of Economic Analysis (BEA) eventually discarded it because it was difficult to choose a discount rate (see Landefeld and Lawson, 1991).

This estimation suffers from all the same problems that we confront when estimating the value of a firm using price-earnings ratio, such as making sure the earnings are relatively stable, that earnings show up as earnings and not as capital gains, that the earnings data be of good quality, and that the discount rate appropriately reflects expected growth and the opportunity cost of time. Even though the discounting interest rate can be taken from an estimation of the typical return on net foreign assets (HS, 2007b find this to be close to 5%) and even if in the estimation it appears to be relatively stable over the sample period, the relevant rate may change over time (with changes in expected growth or interest rates). One potential advantage of applying this methodology to the overall earnings on net foreign assets is that we average over a large number of firms and agents, so that the resulting earning flow may be relatively stable. Yet, if the earnings of any given year still give an unreliable measure of its true earning potential, if we average over an economy and look at trends over a couple of years, we should obtain reasonable results.

To further understand the sources of the stock of dark matter (*DM*) it is useful to write it as

$$DM = NFA_t^{DM} - NFA_t = \frac{NII_t}{r} - NFA_t = \frac{\tilde{r}(NFA_t + \mu_t)}{r} - NFA_t = \frac{\tilde{r}}{r} \mu_t + \frac{(\tilde{r} - r)}{r} NFA_t, \quad \text{where } NFA_t \quad (3)$$

stands for the official measure of net foreign assets as estimated from the accumulation of the current account. In this expression we allow for assets to be mismeasured, with μ indicating that error in measurement. In addition we assume assets to yield a rate of return \tilde{r} different from the constant rate used for discounting. The two terms in the last expression of equation (3) allow to visualize that dark matter may have two origins: the capitalized return to unaccounted assets and to yield “privileges”. This makes sense to the extent that ex-post returns reflect expected returns and the return premium is consistently paid, i.e. when the return privileges appear to be stable.

Why would the dynamic of income flows diverge from what we should expect from current account dynamics? As we mentioned above the literature has stressed two main reasons: valuation effects that change the value of the assets independently of the current account, and yield privileges that imply that some countries exhibit abnormal returns. The first has received substantial attention, as it is potentially relevant for explaining the US current account imbalance. Because the US economy can issue liabilities in its own currency, a dollar

depreciation implies a capital gain by diminishing the value of net foreign liabilities (see for example Blanchard, Giavazzi and Sa, 2005) thus easing the burden of an adjustment. But, of course, that channel plays only a limited role when explaining the discrepancies for a much wider range of countries many of whom cannot even issue debt in their own currency. There are multiple other reasons why income flows may not track current account dynamics closely. Some of these reasons have been the object of a recent and intense debate, and therefore deserve a brief review here.

A first channel involves the notion that foreign direct investment (FDI) abroad is a vehicle for two income flows that are very imperfectly captured in official statistics. First, the valuation effects that are associated to the fact that FDI allows for the dissemination of ideas, blueprints and knowledge. The valuation effects are not picked up because market value adjustments to FDI assets that do not have visible market prices occur at best on the basis of the host (not source) country characteristics, and these are not likely to be strongly related to the earnings potential of the firm.³ Second, the return to unrecorded exports of services from headquarters to their affiliates around the world. These are missed simply because there is no registration of the services shared across national borders within the firm.

A second channel may come from the underlying stability or instability of a given economy that may allow some economies to sell some of this stability to the rest of world, and charge for it, while other countries pay to diversify away some of their own instability. This is just the standard risk premia argument (dating back to Frankel, 1982), which will persist in equilibrium. The payments corresponding to this risk premia are akin to the trading of insurance services. Some of the most innovative recent interpretations to explain the US current account imbalance rely on this channel. Mendoza, Quadrini and Rios Rull (2006) provide a story where agents in financially sophisticated markets can insure their local and worldwide claims, something that agents in less financially developed countries cannot do. In equilibrium assets in the less financially developed country must earn a higher return, because local agents are unable to fully insure their claims there.⁴

The Mendoza *et alii* (2006) approach directly derives the risk premia resulting from financial backwardness. The related perspective of Caballero, Farhi and Gourinchas (2005) focuses on financial backwardness in some fast-growing countries, such as China. Underdeveloped financial systems can prevent agents in those countries from writing claims on their own productive assets. This forces residents in those countries to use their savings to buy foreign assets while allowing foreign companies to own their productive assets. The superior financing /corporate governance technology provides a return differential. In their interpretation financially developed countries sell financial services and charge for them.

Another explanation, though focused on the US, is provided by Michael Dooley, David Folkerts-Landau and Peter Garber (2004) who argue that current imbalances are sustained by peripheral

³ For a description of the methodological approach see Kozlow (2002) on US data, and Simard and Boulay (2006) on Canadian data.

⁴ In fact there are three main reasons why assets in equilibrium may be discounted at different rates: surprises, risk premia and embedded services. Surprises refer to the fact that assets may turn out to have a lower rate of return if faced with expropriation, restructuring or unexpected negative business conditions, and this risk requires an ex ante higher discount rate to compensate for these expected losses. But the net income flows already take this into account because they are ex-post returns. Because they average out over a large number of assets it seems implausible (though not impossible) that realized returns may differ significantly and for very long periods from expected returns. This leaves the risk premia and embedded services as drivers of ex post return differentials.

countries adopting export-led strategies with undervalued pegged exchange rates and capital controls. In this approach, dubbed Bretton Woods II, some countries are willing to purchase specifically US assets at lower (*expected*) returns as part of an implicit contract with the US, whereby they are guaranteed access to its domestic market. To the extent that this is a “purchase” of the access to the US market, it is another reason for a yield differential.

Alternatively a yield differential may arise from the provision of liquidity services, basically through the use of a foreign currency or by paying a premium for purchasing instruments in liquid financial markets. The simplest example is when people around the world need liquid assets and choose to hold a particular currency, dollars, pounds or euros in cash, that earns them a zero interest rate. By having foreigners accumulate this currency, and by paying no interest on this, the source country can accumulate current account deficits, in the amount of the demand of this currency, without deteriorating its net investment income account. But liquidity services do not only originate from seignorage. Deep financial markets may also carry a liquidity premia advantage that allows paying lower returns for the issuers in those markets. This is likely relevant for the few countries that issue vehicle currencies for global or regional markets (the dollar, the pound, the euro, the Swiss franc and the rand are natural examples).

Finally, the empirical results that identify very poor countries that have been the target of debt relief as showing high return privileges suggests that an additional channel is debt relief that also allows large deficits to be accumulated but never repaid.

With this discussion it is easy to see why computing net foreign assets and current account inclusive of dark matter may be interesting for the East Asian region. First, by computing net foreign assets by capitalizing net investment income, we can provide an alternative, probably more realistic, measure of the current account. This will allow us to assess, perhaps under a different light, the evolution on the net external position of the region and of individual countries. Second, because as explained above foreign direct investment (FDI) is an important channel through which dark matter is imported or exported (see also Chari, Ouimet and Tesar, 2007). Because FDI has played an important role in the investment dynamics in the region it is likely that the official statistics do not capture precisely the evolution of income payments flows. Third, because looking at the current account through the lens of dark matter can provide alternative insights on the regional conditions pre- and post-Asian Financial Crisis of 1997. Finally, as the pressure for Chinese renminbi to depreciate has been increasing pari passu with the expanding US current account deficit with China, analyzing whether that surplus exists once dark matter is taken into account as well as better understanding its underlying causes could be an additional useful input into that debate.

III. Results for East Asia

The six figures under Figure 1 show the current account, net foreign assets, and dark matter both as percentage of GDP and in absolute dollar terms for the East Asian region. Whenever we show the current account we plot both the dark matter inclusive current account as well as that arising

from official statistics. Likewise, net foreign assets with dark matter are compared to the net foreign assets calculated from accumulating the officially reported current account balance.

What do the comparisons indicate? For the East Asia as a region, which includes ASEAN + 3 countries, the trend of the net foreign assets with dark matter moved closely with the official net foreign assets calculated by accumulating the current account balance. Both numbers start growing in the early 80s, growth that continues until the early 90s. From the mid nineties until 2004, there are a large imports of dark matter, resulting in an official net foreign asset position (NFA) that is much higher than the NFA with dark matter. The lower panels show the increase in dark matter during this period. However, the gap between the two measures starts closing in 2005, and for the last two years both official statistics and dark matter methodologies indicate that East Asia as a region is a net creditor. Because now the region is reducing its dark matter liabilities, the result is that the current account inclusive of dark matter delivers a larger current account surplus. For example, while official statistics put the current account surplus of the region at 4% of GDP in 2005, adding dark matter changes the current account surplus appears to be in excess of 6%.

A major source of discrepancy (see the chart on dark matter) seems to be around the time of Asian Financial Crisis of 1997 and we can think of two drivers behind it: first, after the financial crisis, foreign investors were exposed to higher risk therefore increasing the “risk premia” that they had to obtained to invest in the region, directly increasing the payments made by the region. This is another way of saying that there was a huge depreciation in the value of the region’s assets in the wake of the financial crisis which is not properly taken into account in official statistics. The second driver relate to the dramatic increase of FDI in China. FDI has been a channel for the imports of dark matter which eventually show up as larger dividend payments abroad which correspond to the payment of the know-how and technology transfer that is not captured in the official net foreign asset position. These payments may be behind the relatively slower growth in net foreign assets during the 1990s. The decrease in dark matter liabilities in recent years is probably the product of both a reduction in the risk premia associated to the region as well as a coming of age of the region’s (particularly China’s) know how, which implies that it needs not rely as much on imported know how.

Large part of this positive net foreign asset position is due to the three largest economies in the region, Japan, China and Korea, that account for almost 90% of the GDP in 2006 (Japan 50%, China 30%, and Korea 10%). Because these three economies are running large current account surplus in the recent years it is worth separating the ASEAN countries from these “+3” economies.

Figure 1. Current Account, Net Foreign assets and Dark Matter for East Asian region

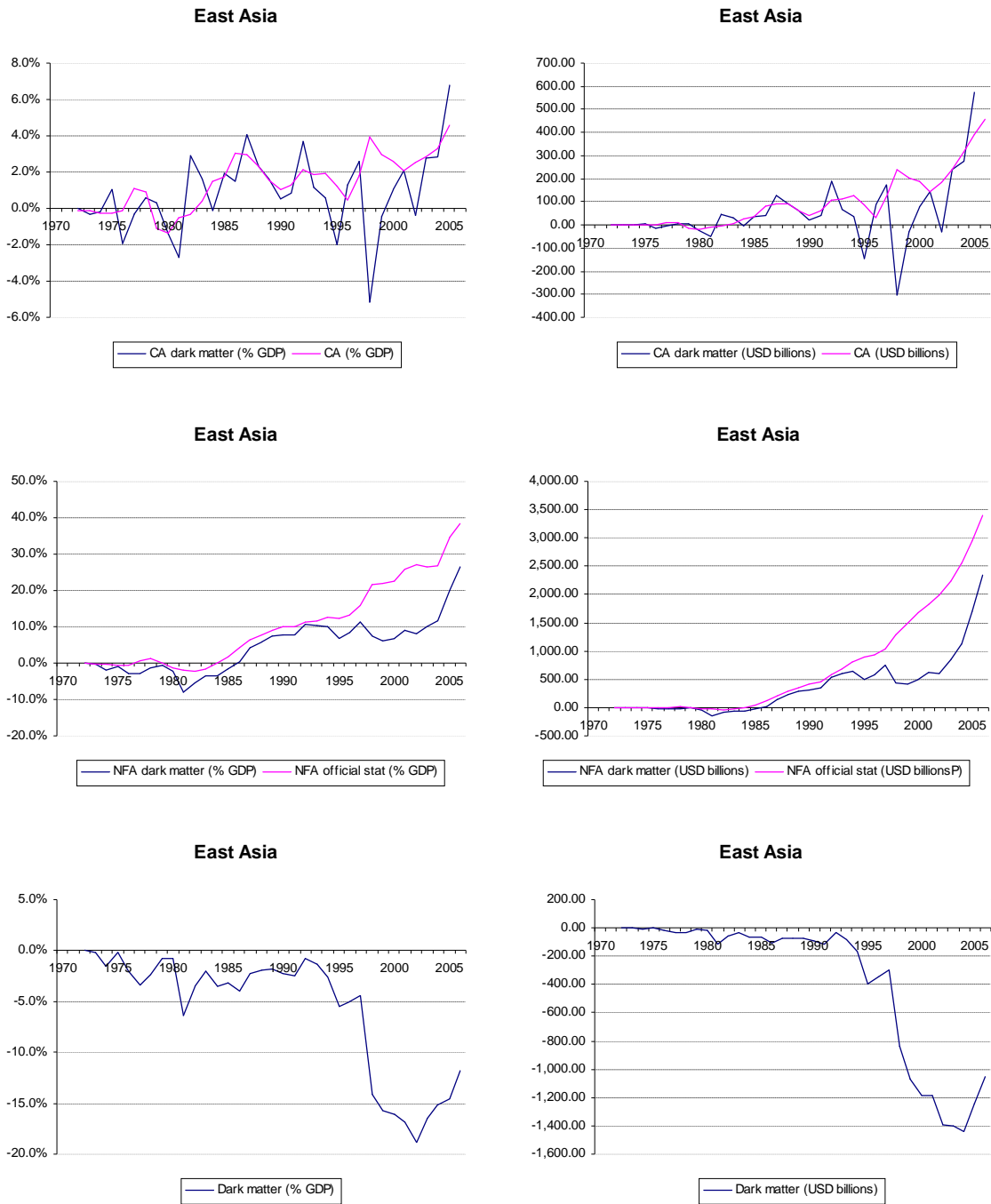
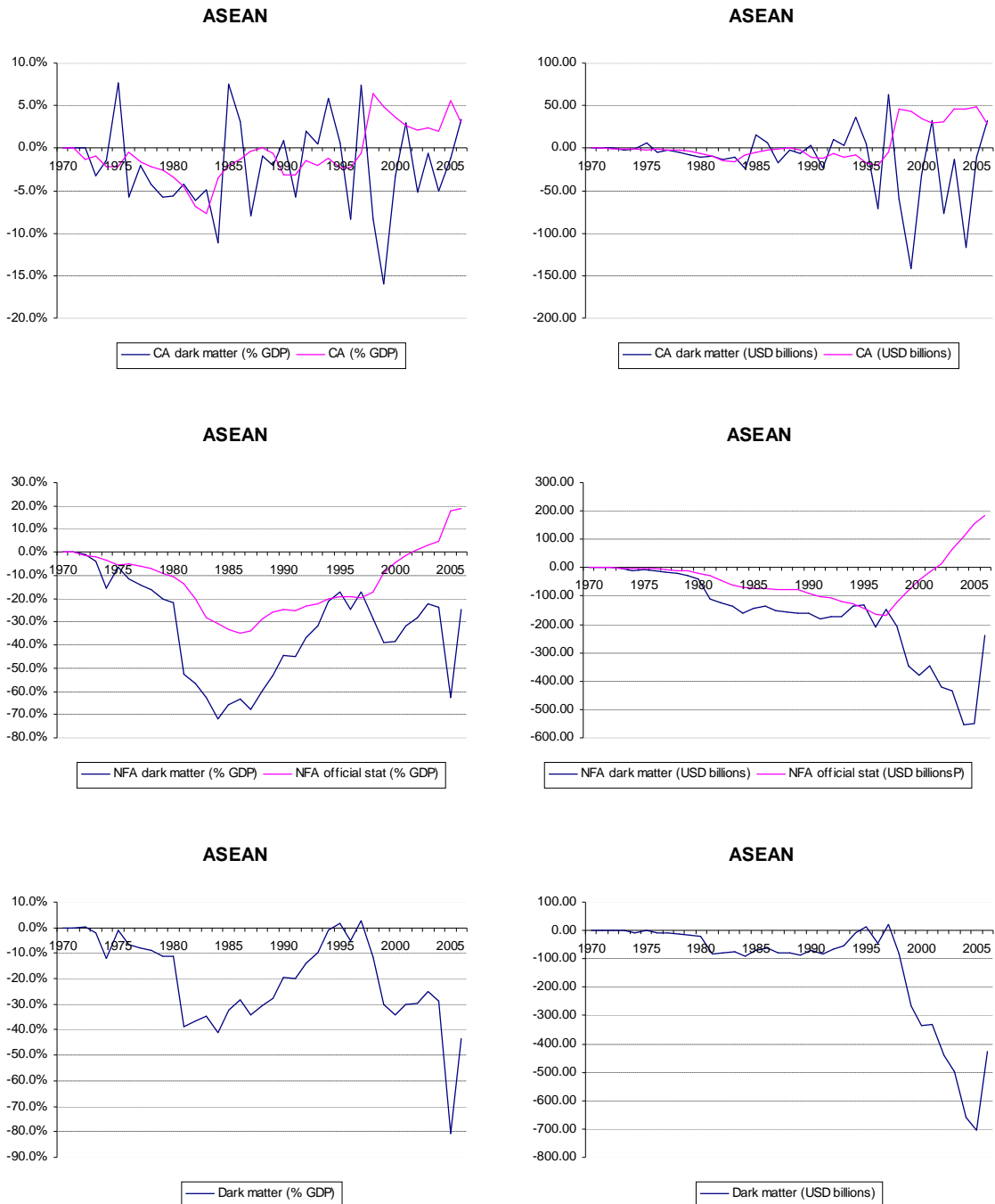


Figure 2 shows the same graphs as before but now only for ASEAN countries. What is striking about these graphs on ASEAN countries is that while net foreign asset position according to the official statistics have improved since 2000 to make them net creditors, the dark matter method indicates the reverse: the ASEAN countries' net foreign asset position has indeed deteriorated over the years. This is a plausible answer if we think about the possible sources of dark matter. In the post-financial crises Southeast Asia, countries have experienced not only repercussion of increases in risk premia that have been slower to reverse than for the +3 countries, but they

probably have a less mature FDI which makes them still large importers of dark matter. In other words, even if these countries may consider themselves to have sound economic management today due to current account surplus and net foreign asset accumulation, the force behind may be such that the real net foreign assets of the countries are weakening and therefore worth attention for improvement.

Figure 2 Current Account, Net Foreign assets and Dark Matter for ASEAN countries

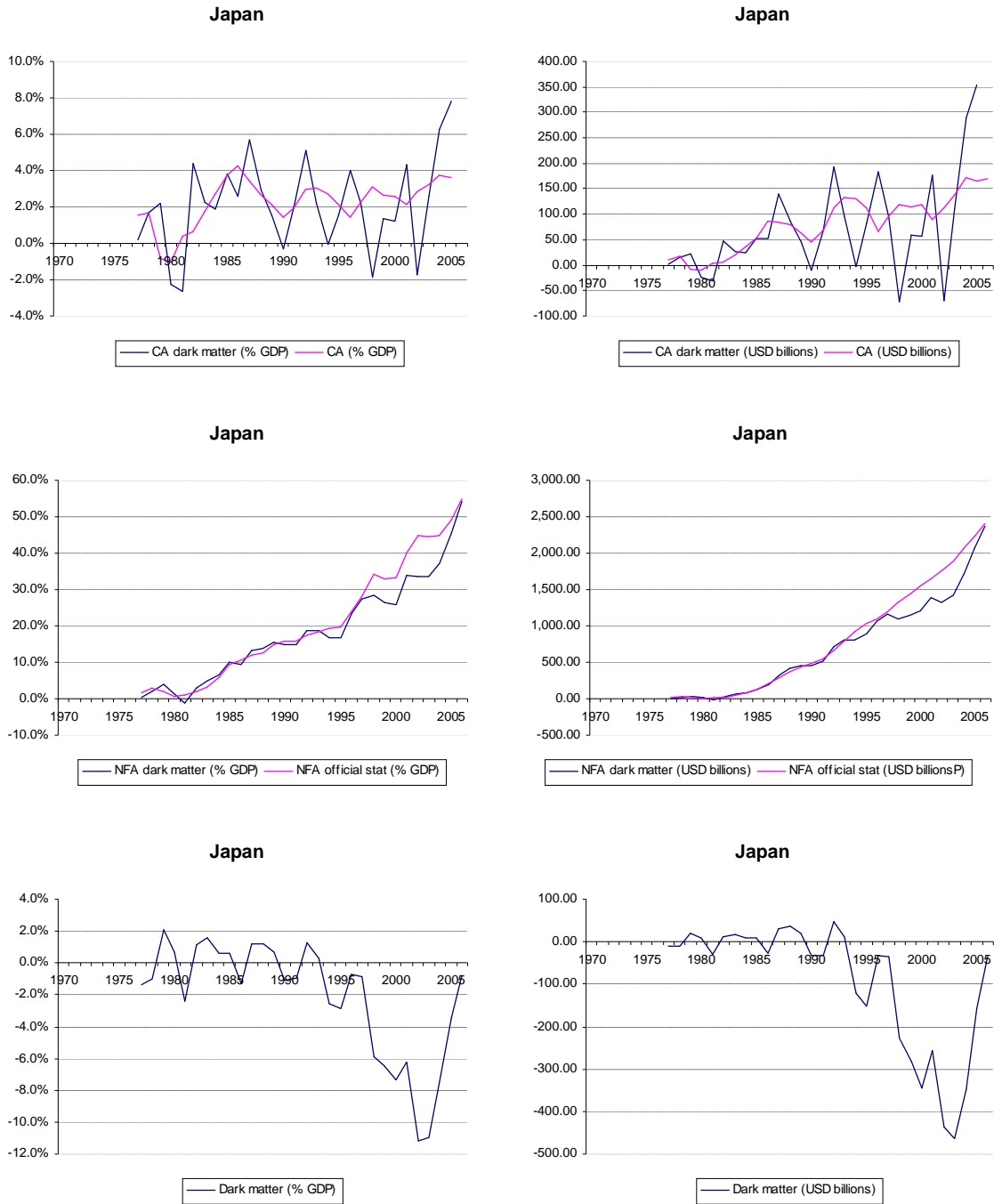


IV. Country Specific Results

A. Japan

Japan has maintained consistent current account surpluses for more than 20 years according to the official statistics. However, as Figure 3 indicates, when the current account is calculated including the dark matter, while the numbers show some larger volatility, the trends for NFA are very similar with the two methodologies (with and without dark matter). During the 90s, the economy appeared to accumulate dark matter. One plausible explanation for this is the fact that during this period Japanese financial institutions maintained very liquid, low risk positions, to face their financial crisis. This implied that their return on net foreign assets was purposely low. This phenomenon seems to have reversed in recent year. In fact, since 2003, the NFA with dark matter is accumulating much faster than the NFA estimated from official current account position. This results in dark matter liabilities virtually disappearing.

Figure 3 Current Account, Net Foreign assets and Dark Matter for Japan

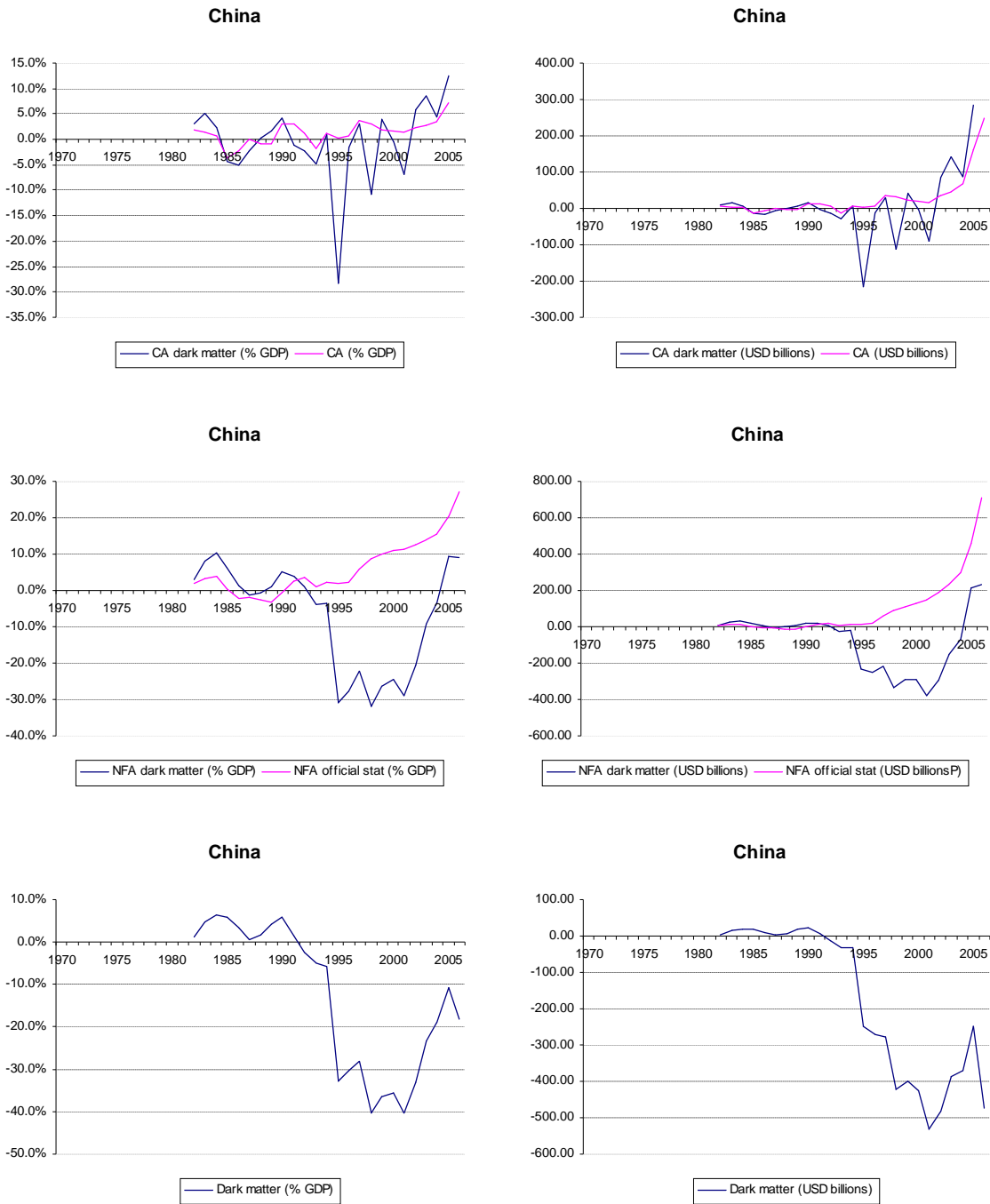


B. China

According to official reports China has maintained a current account balance that has moved into surplus territory more recently. This has led, always according to official statistics, to an accumulation of foreign assets that has made China a large net creditor. As Figure 4 indicates, however, starting around 1995, net foreign assets with dark matter show a dramatic fall which makes China a net debtor until 2003, though it has since then rapidly improved its net foreign

asset position. Most likely this deterioration is determined by the increase in payments on FDI that had accumulated over the previous years. In terms of the actual NFA position, while official numbers put the figure at close to 800 billion by 2005, with dark matter the number is a more modest 200 billion. How about the renminbi? We should check the current account numbers for recent years. These numbers show that as China reduces its dark matter liabilities, this increase has been even more pronounced in recent years. In fact that chart below suggests that while official numbers indicate a current account surplus of about 5% of GDP the real number is closer to 10% of GDP, though given the volatility of year to year numbers this should be taken with care. In any case this implies that in fact there may be more reasons than not for Chinese renminbi to be devalued to correct the current account imbalances.

Figure 4 Current Account, Net Foreign assets and Dark Matter for China

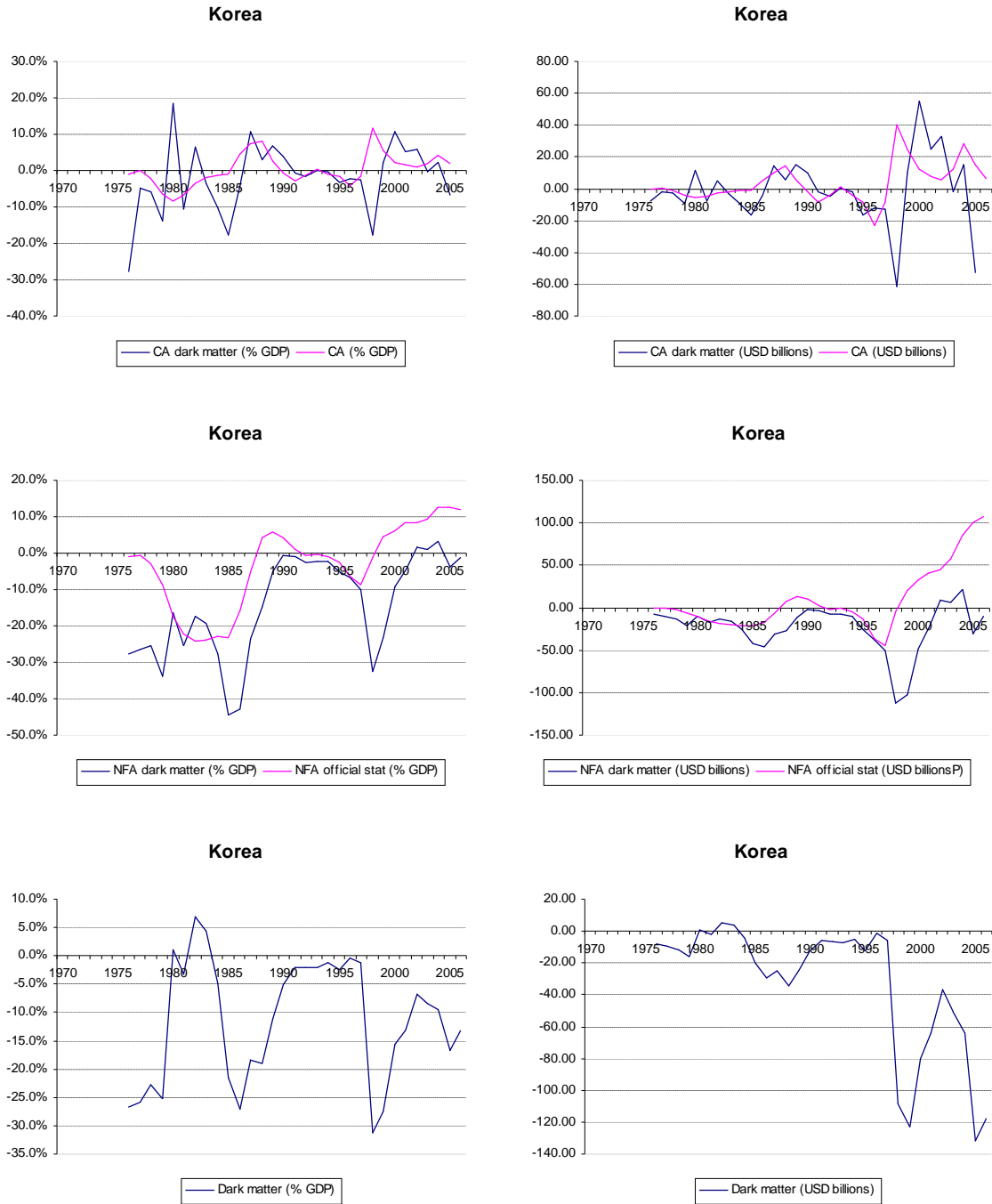


C. Korea

Korea was one of the four countries hit harshly by the Asian Financial Crisis of 1997. As we can see in Figure 5, the current account according to the official statistics recorded over 10% surplus in 1998 after the currency devaluation, however, with dark matter, current account was actually negative, at roughly 15% of GDP, a reflection of the higher financing costs faced by the economy. It is because the net foreign asset position with dark matter remained below the net

foreign assets calculated by CA accumulation, that today Korea appears with a balanced NFA position whereas official numbers show Korea as a creditor. It is worth mentioning that the only large discrepancy between the two methodologies does arise in 1998, in the amount of 30%% of GDP, as otherwise the numbers show similar trends.

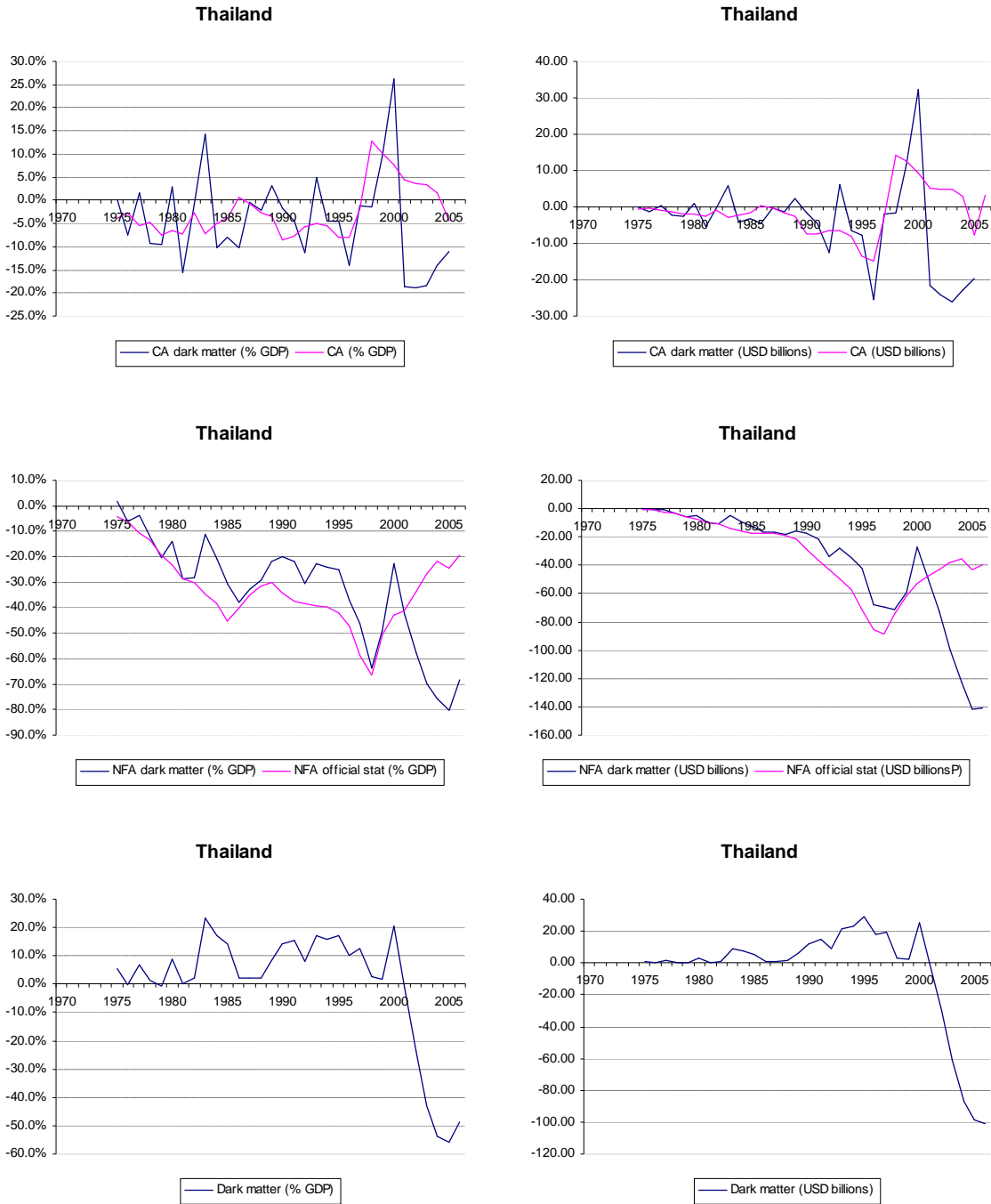
Figure 5 Current Account, Net Foreign assets and Dark Matter for Korea



D. Thailand

Thailand's current account has been in deficit for the past 25 years according to official statistics which turned into a large surplus at the outset of the Asian crisis. This is reflected in Thailand increasing its net debtor foreign asset position as shown in Figure 6, as well as the net foreign asset position estimated inclusive of dark matter both of which trend very closely until 2000. Since 2000, while the net foreign asset position according to the current account statistics has improved due to positive current account surplus, net foreign asset position with dark matter deteriorated dramatically. The recent deviation may be explained by the high profitability of the foreign direct investment flown back in after the Asian Financial Crisis, which brings capital gains to the investors but a capital loss to the country.

Figure 6 Current Account, Net Foreign assets and Dark Matter for Thailand



E. Indonesia and Malaysia

Indonesia and Malaysia are two countries that combine two features that presumably anticipate dark matter liabilities. First, that they are typical cases for “natural resource” countries where estimated net foreign asset position consistently performs much more poorly than the net foreign asset position calculated by the current account (Figures 7 and 8). The main reason for this is that capital inflows finance investment in the natural resource sector, and this investment becomes

very profitable during a commodity boom which is tantamount to an increase in the value of these investments, representing a capital gain for the investors and a capital loss for the countries. Second, they also are large receptors of FDI which is associated to dark matter imports. Indonesia, on top, has had significantly macro turmoil during the 1990s adding a risk premia factor. All these issues have born out with both countries accumulating large stocks of dark matter liabilities. In the case of Indonesia while official statistics suggest the country is in external balance, dark matter inclusive numbers point to liabilities of about 80% of GDP. In the case of Malaysia official assets for about 50% of GDP become liabilities for about 50% of GDP.

Figure 7 Current Account, Net Foreign assets and Dark Matter for Indonesia

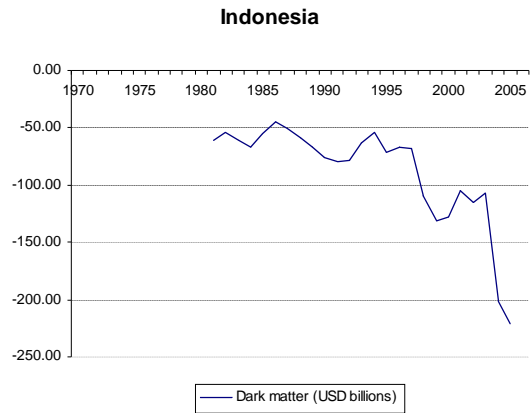
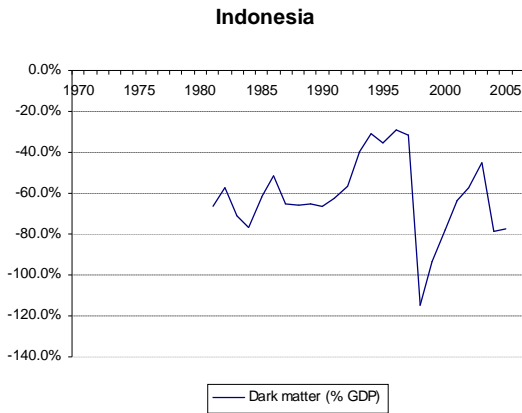
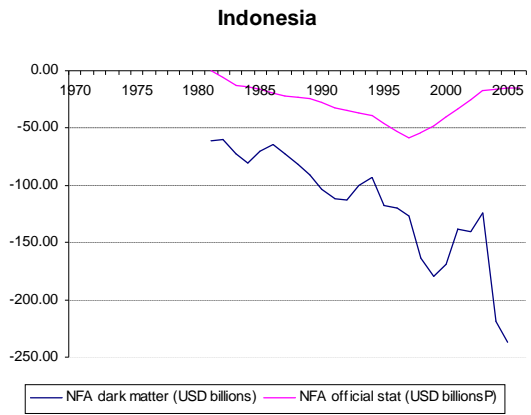
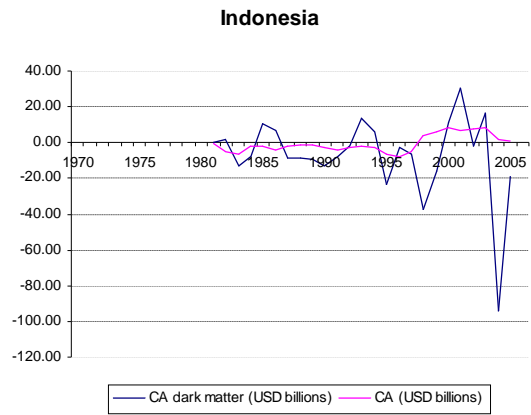
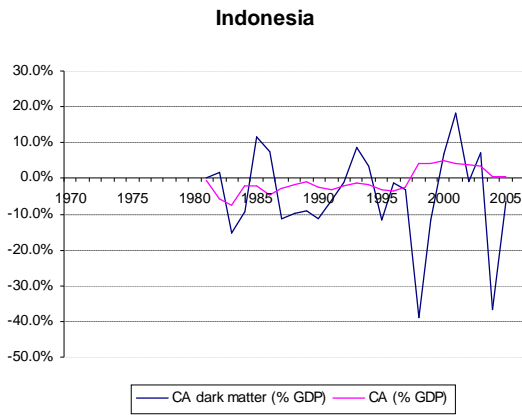
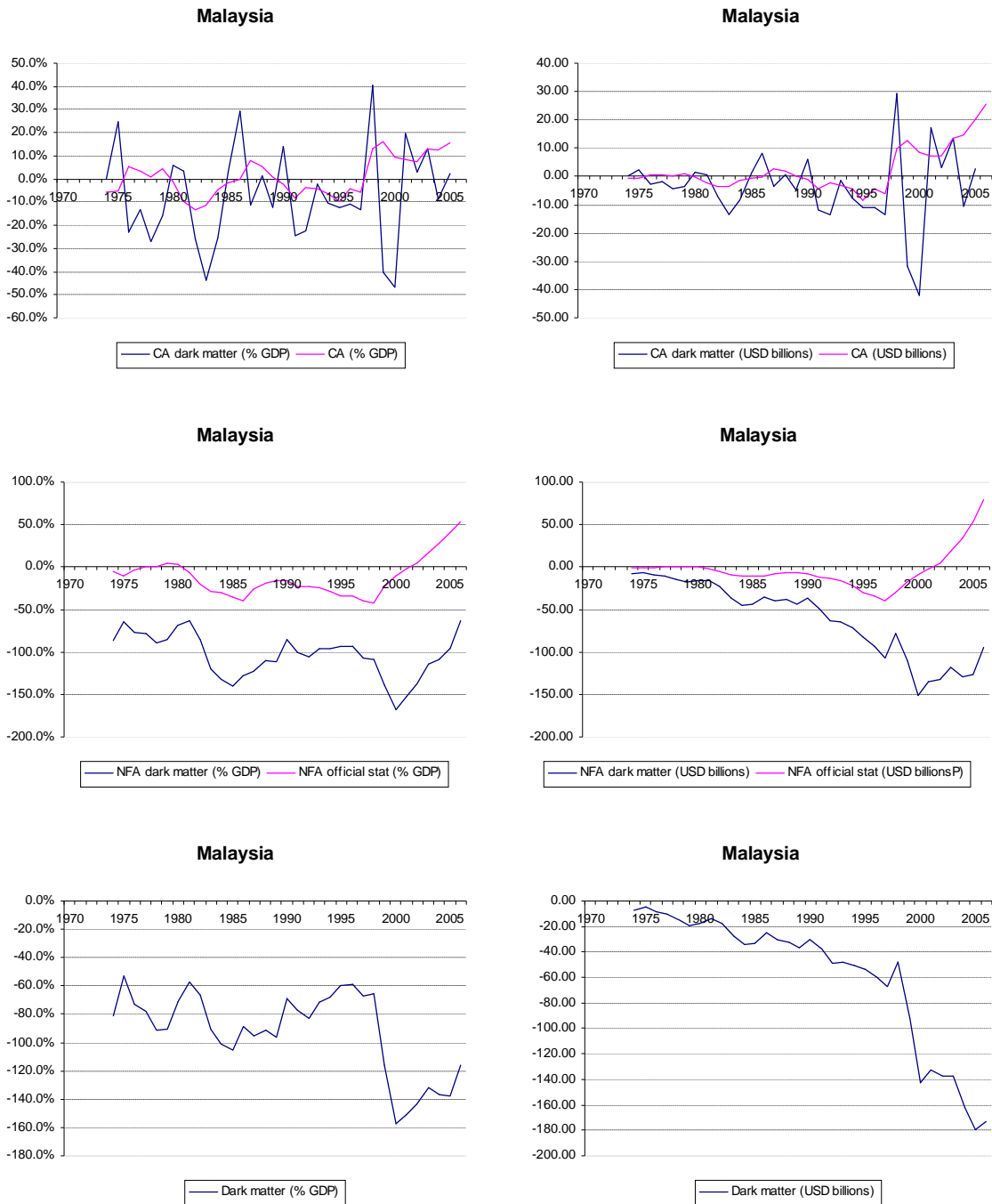


Figure 8 Current Account, Net Foreign assets and Dark Matter for Malaysia

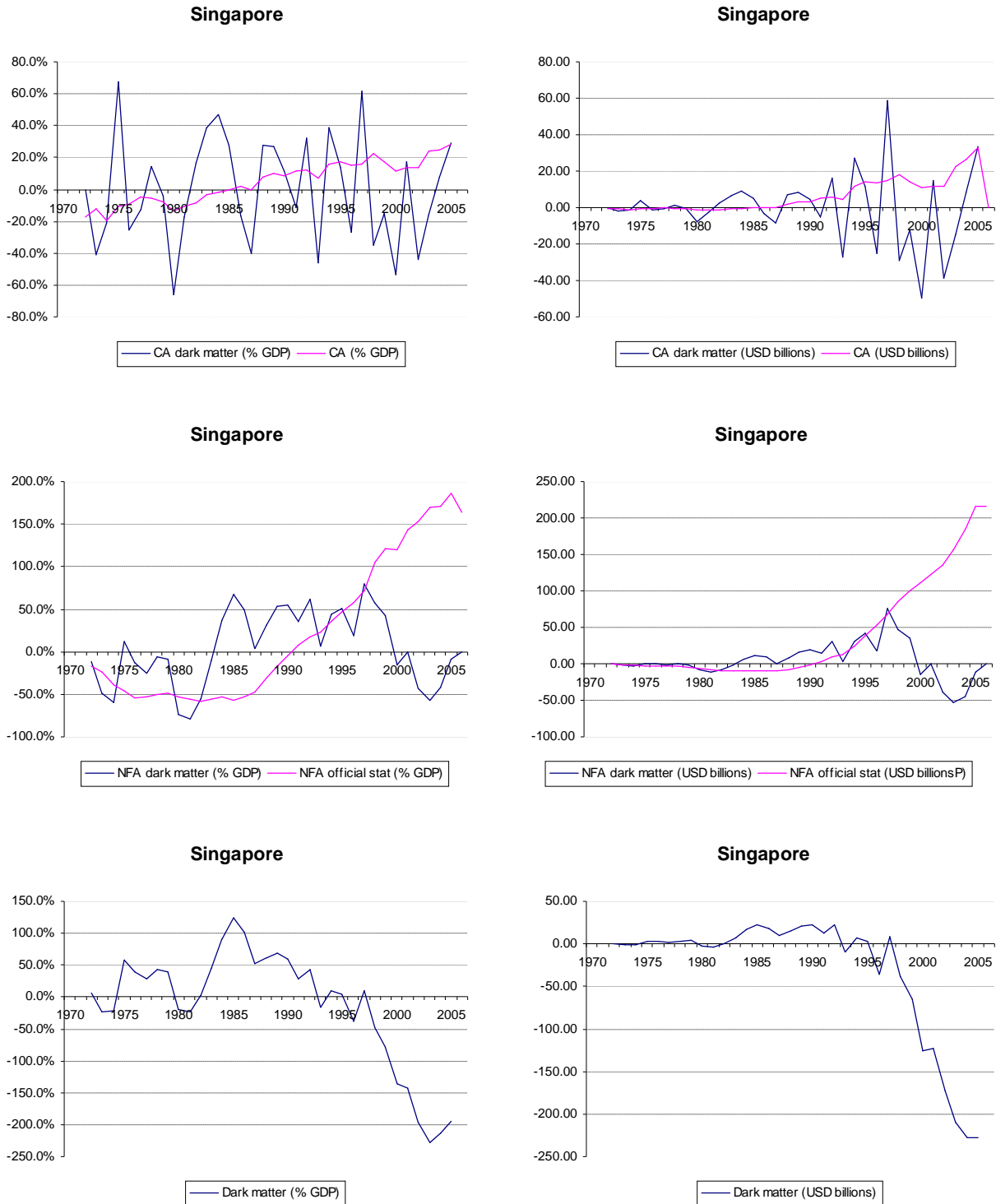


F. Singapore

Singapore has maintained steady surplus of current account balance over the last twenty years according to the official statistics, leading to the accumulation of net foreign assets beyond 100% of the GDP (Figure 9). However, the calculation indicate that the net foreign asset position including dark matter has been more volatile, and in fact between 2000 and 2005 the country was a net debtor rather than net creditor. While between 1970 and 1998 the two methodologies track each other quite well, there is a large discrepancy over the last 10 years. The explanation may be,

as in the case of Thailand, extremely profitable foreign direct investment, so that despite large current account surplus and accumulation of net foreign assets, the investors receive capital gain while country incurs capital loss.

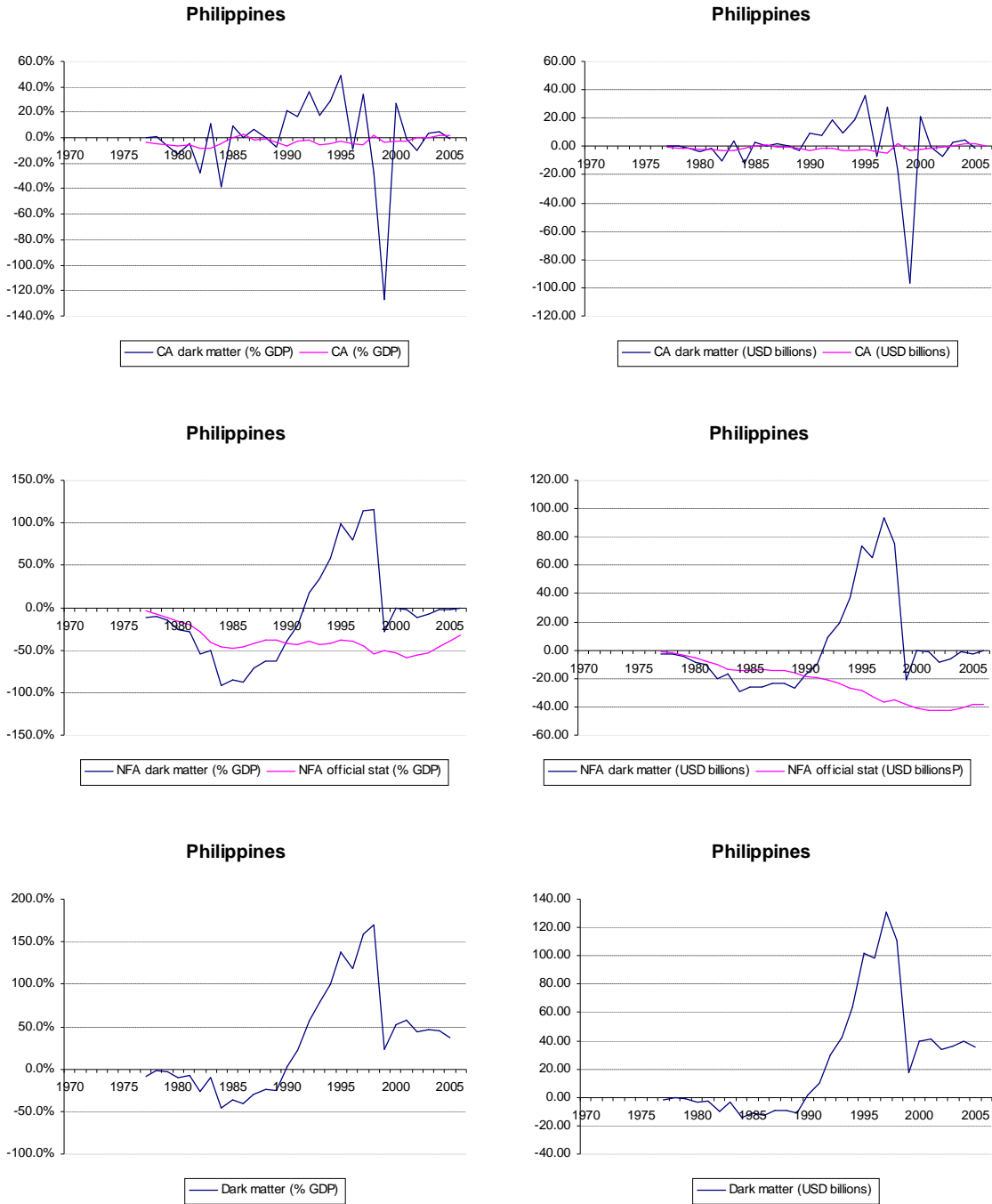
Figure 9 Current Account, Net Foreign assets and Dark Matter for Singapore



G. Philippines

The net foreign asset position of the Philippines can be analyzed in three phases. First, until the early 1990s the net foreign assets with dark matter have been much worse than the net foreign assets calculated from the current account balance. This reflects a pattern typical of countries that suffered the debt crisis of the 1980s. Second, between early 1990s and 1998, in which the country was a large net creditor according to our calculation, the result of substantial debt relief obtained in the framework of the Brady deals. However in 1998 there is a dramatic collapse as Philippines suffers the effects of the Asian crisis. Since 1998 onwards, the net foreign asset positions calculated by two different methods have been moving closely.

Figure 10 Current Account, Net Foreign assets and Dark Matter for Philippines



H. Vietnam & Cambodia

Though the data availability is limited to past 10 to 15 years, the results also indicate that these countries have been large importers of dark matter with net foreign assets dark matter inclusive much more negative than those derived from the current account statistics. As in our other cases FDI payments play an important role. (Figures 11 and 12).

Figure 11 Current Account, Net Foreign assets and Dark Matter for Vietnam

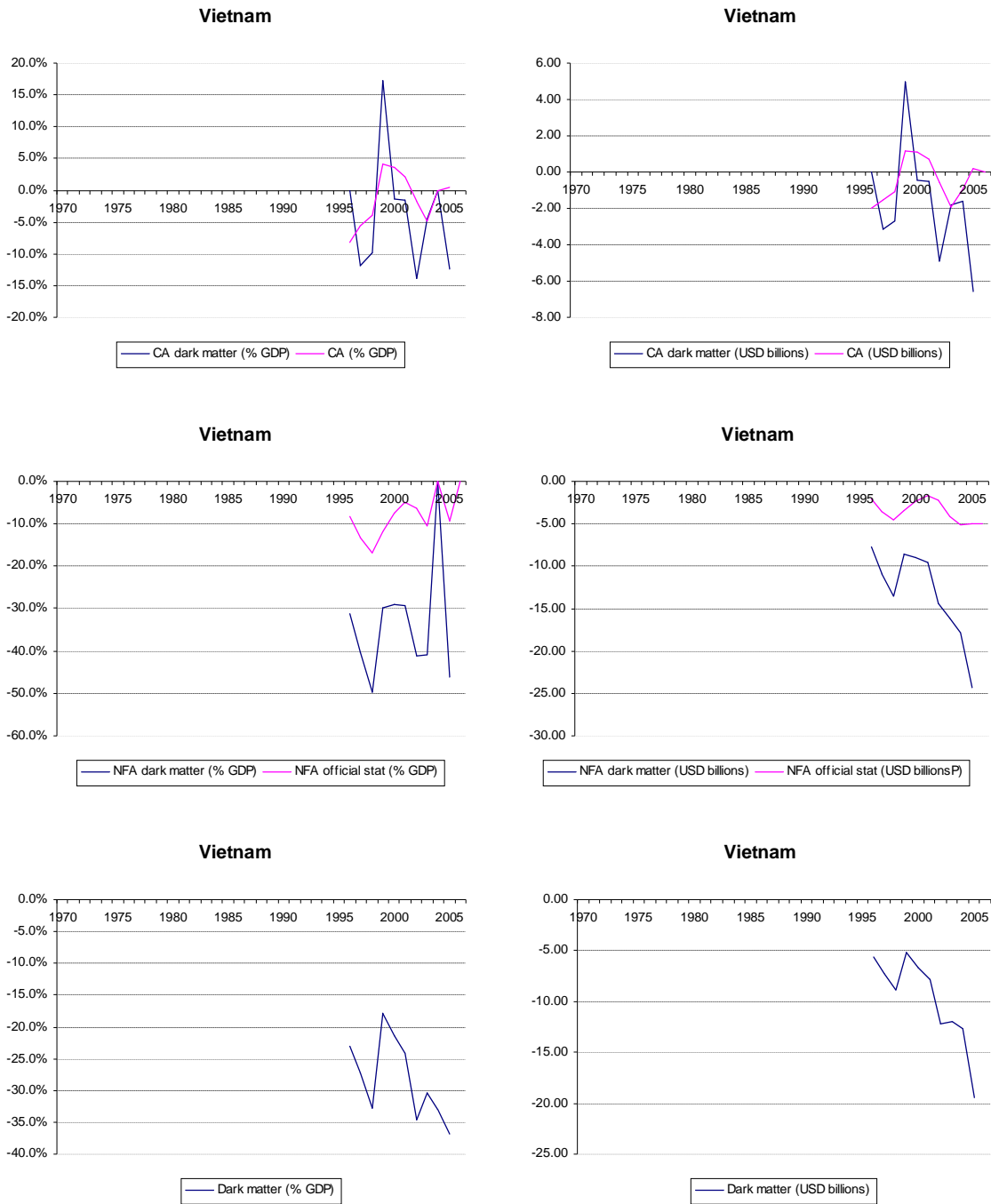
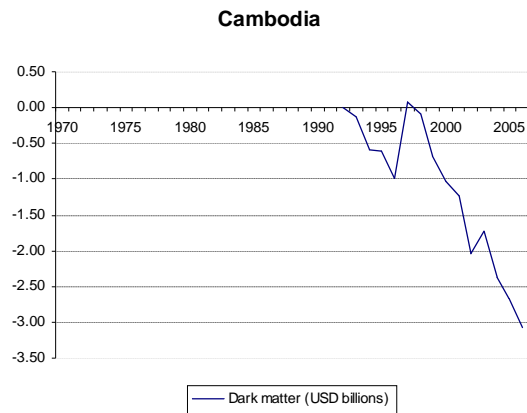
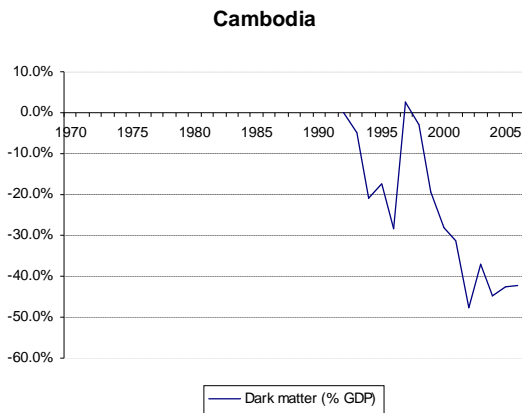
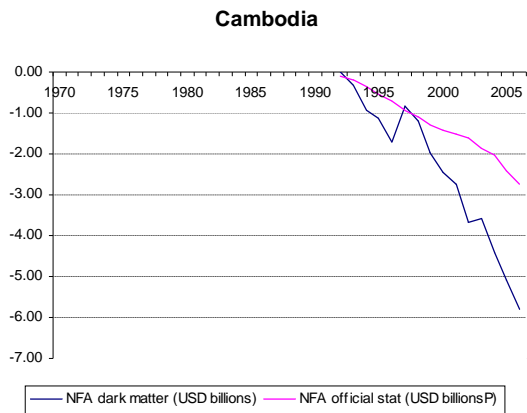
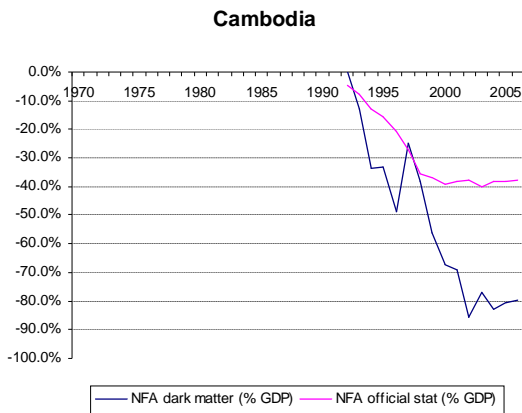
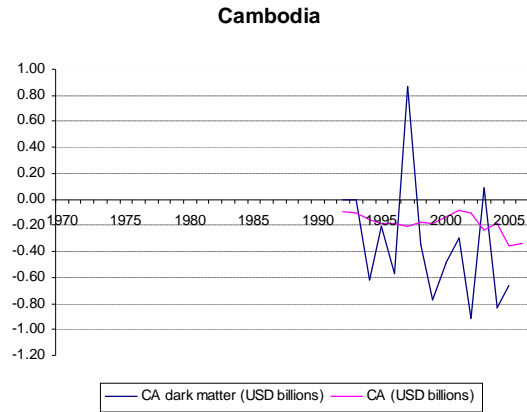
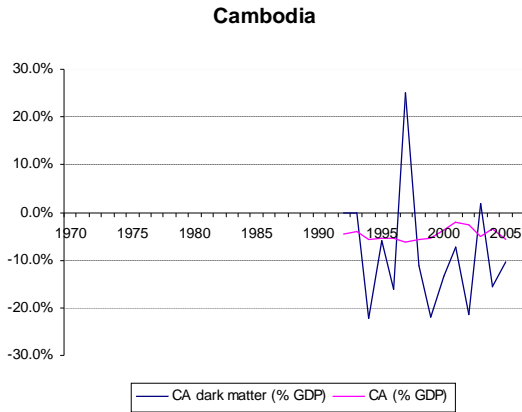


Figure 12 Current Account, Net Foreign assets and Dark Matter for Cambodia

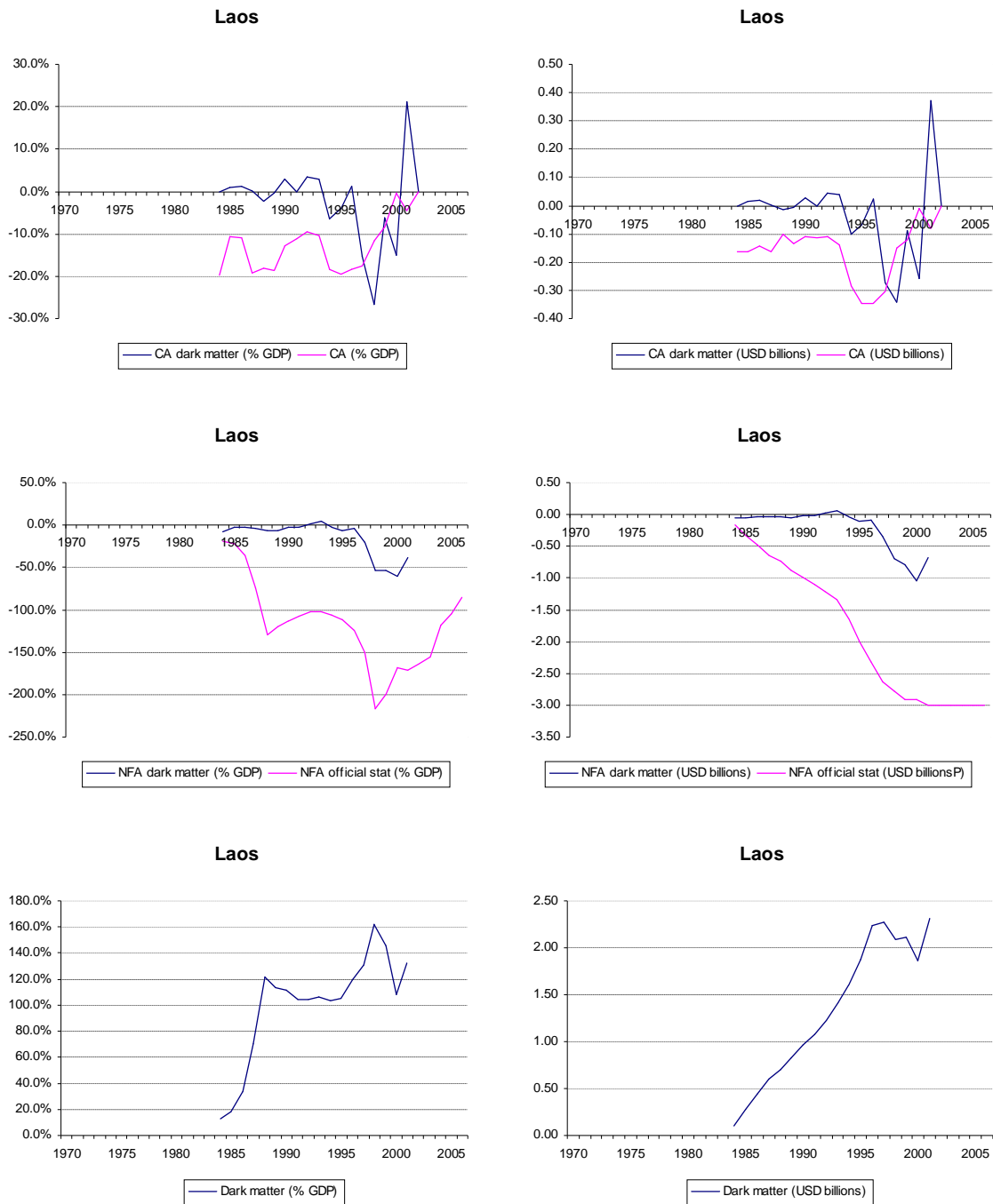


J. Laos

Laos had already been identified by Hausmann and Sturzenegger (2007b) as a significant exporter of dark matter, at least in terms of its GDP. The reason why Laos is an exporter of dark matter is, basically, debt relief (see Figure 13). Although the country has not been officially approved for the HIPC debt relief to date, the fact that the country receives large amount of foreign aid loans at extremely low interest rate as well as grants allows the country to keep its

interest payment low relative to the increase in indebtedness captured by the current account deficit.

Figure 13 Current Account, Net Foreign assets and Dark Matter for Laos



V. Conclusion

Net foreign assets estimated from the accumulation of the current account balance and net foreign assets with dark matter have moved with similar trends in ASEAN + 3 region until the

mid 1990s. Since then, there has been a divergence between the two, with the official net foreign asset position overestimating the net foreign assets relative to those calculated with the dark matter. This is consistent with the fact that the region has attracted large amounts of foreign direct investment, for which the transfer of technology and knowledge are not accurately captured by the valuation of the foreign asset position. In addition, for countries that experienced a significant deterioration in their macro outlook during the Asian financial crisis of 1997, the official current account statistics may be missing the large increase in external payments that the crisis entailed and thus implies that the asset position is more negative than officially measured.

Of special interest are Japan, that shows low external returns in the 90s associated to its financial crisis, China that accumulated large dark matter liabilities but is now quickly reversing them, something that implies that its current account surplus is larger than what is typically measured, and Korea that had a reduction in the value of its net foreign assets during the Asian crisis that barely leaves it with a balanced net foreign asset position by 2005.

Two countries that are more dependent on natural resources –Indonesia and Malaysia—fall under the typical natural resource country trajectory in which their official statistics has shifted the level of the current account deficit and net foreign asset position over the years. Two countries with exception are Laos and the Philippines, whose net foreign asset positions according to the official statistics is actually underestimated compared to the net foreign asset position estimated with dark matter. The larger proportions of foreign aid they receive compared to other countries allow them to run more current account deficit without having to pay for it.

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