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Modelling the Vietnamese Economy

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Abstract: This paper considers the factors determining the long-run behaviour of the Vietnamese economy. Using a macro-economic model of the Vietnamese economy it considers some of the factors that have contributed to growth over the last decade and also some of the policy options for the rest of the decade.

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1. Introduction

This Chapter considers the factors determining the long-run behaviour of the Vietnamese economy. It builds on research developing the Vanmieu macro-economic model of the Vietnamese economy. It considers some of the key factors that have contributed to the recent rapid growth in the economy and, in the light of the research outlined in this book, discusses some of the policy options that might contribute to further successful growth over the rest of the decade.

The Vietnamese economy has undergone a massive transformation over the last 25 years. In particular, the move to a more market based economy from the middle years of the 1990s has seen dramatic change, with the economy transitioning from being very dependent on agriculture in 1990 to the situation today where it is a very open economy, relying on the industrial and services sectors for most of the growth in living standards.

Section 2 briefly considers the background to the transformation of the economy and how it has changed from being one of the poorer countries in the world to its current status as a middle income economy. Section 3 describes the structure of the economy today. Section 4 provides a non-technical description of the Vanmieu model of the Vietnamese economy which is used in the rest of the Chapter to help in the analysis of the economy of Vietnam.

In Section 5 of this Chapter the role of foreign demand in promoting growth in the economy is considered, using the Vanmieu model, and Section 6 examines the labour market and how it relates to the demographics of Vietnam. The behaviour of the labour market is rather different from that in a more developed economy, with the reserve of underemployed rural labour playing an important role in facilitating sustainable growth. Section 7 covers the balance of payments and inflation.

Section 8 discusses the role of the public sector. The structure of taxation and the extent to which fiscal policy has influenced growth is considered. There are also wider issues, which are important for future growth, such as investment in infrastructure and the role of state owned enterprises in the development of the economy. While these are not covered in the current version of the model, their significance is discussed in the light of other research available on how the Vietnamese economy works.

Section 9 examines the productivity performance of the Vietnamese economy since the mid-1990s and, in Section 10, the research undertaken using the model forms the basis for a discussion of the how public policy can best be deployed to sustain a high rate of growth in the economy over the rest of the decade. It will also consider some of the factors that may constrain future development.

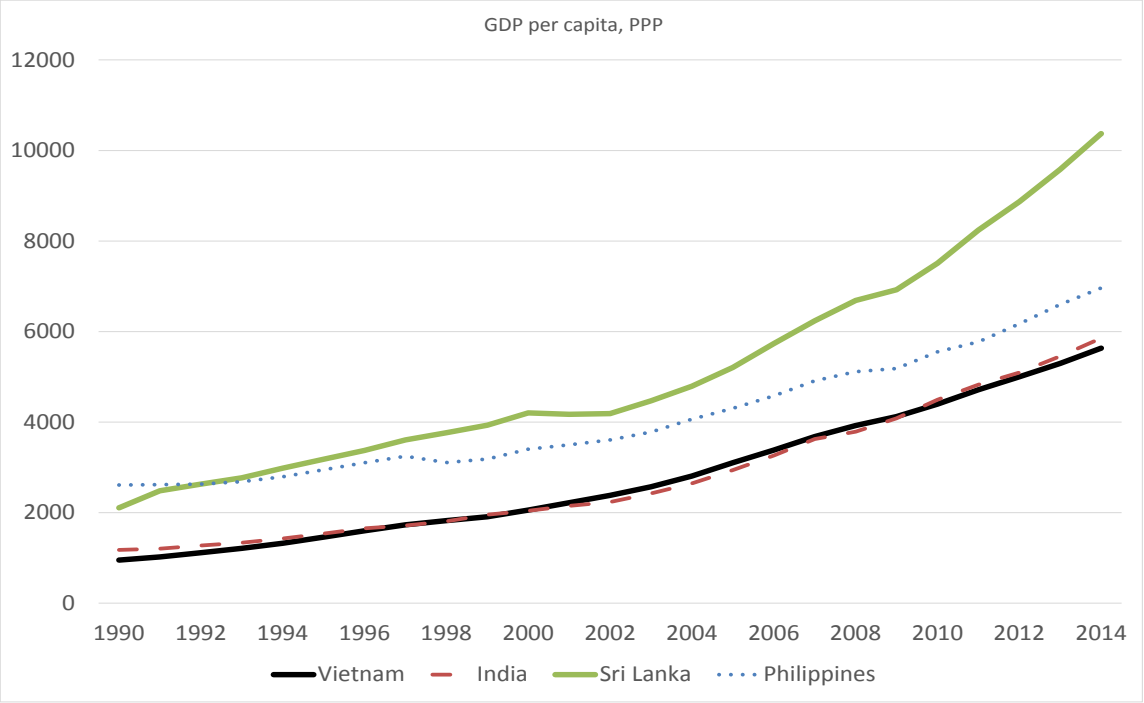
Finally in Section 11, areas where further research could enhance the model and our understanding of the Vietnamese economy are discussed, and some conclusions are drawn about the priorities for policy.

2. Background

The 1980s was a very difficult decade for Vietnam as it recovered from the prolonged wars of independence. Rebuilding the basic infrastructure and returning the agricultural sector to normal took some considerable time. Even in 1990 Vietnam was one of the poorest countries in the world.

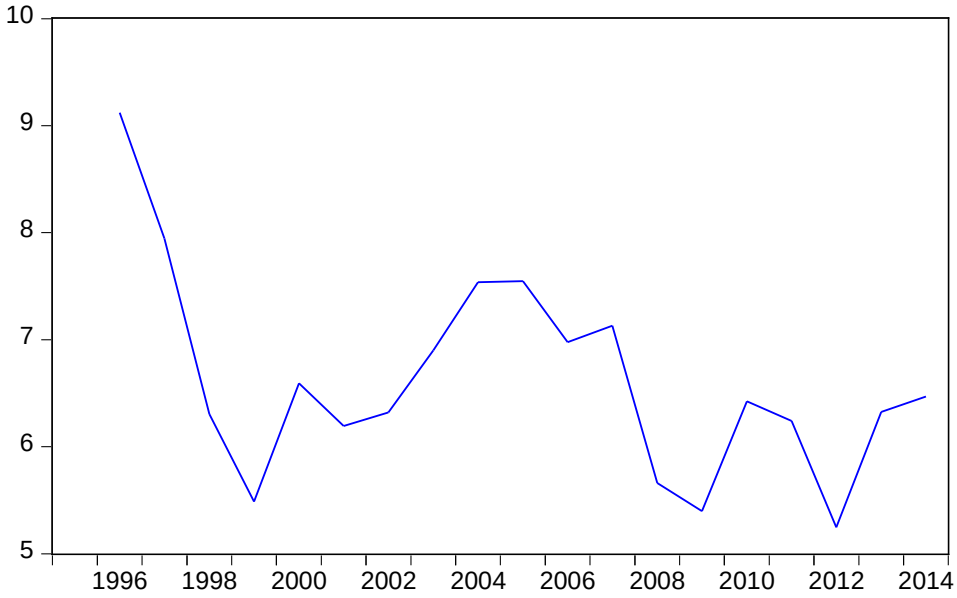
However, beginning in the 1990s Vietnam began its long period of growth to reach its present stage of development as a middle income country. Figure 1 shows how Vietnam has followed a similar path to India at a similar standard of living. In the case of Vietnam, over the last 25 years the average growth was just over 7% a year (Figure 2) whereas it was just under 7% a year in the case of India. Sri Lanka, which began off at a higher standard of living in 1990, also experienced growth in GDP per head, adjusted for PPP, of just under 7% a year. The Philippines, which began off in 1990 with a significantly higher standard of living than Vietnam, similar to that of Sri Lanka, has seen a somewhat slower growth in living standards over the same period, at just under 4% per year.

Figure 1: Gross Domestic Product per capita, PPP Adjusted



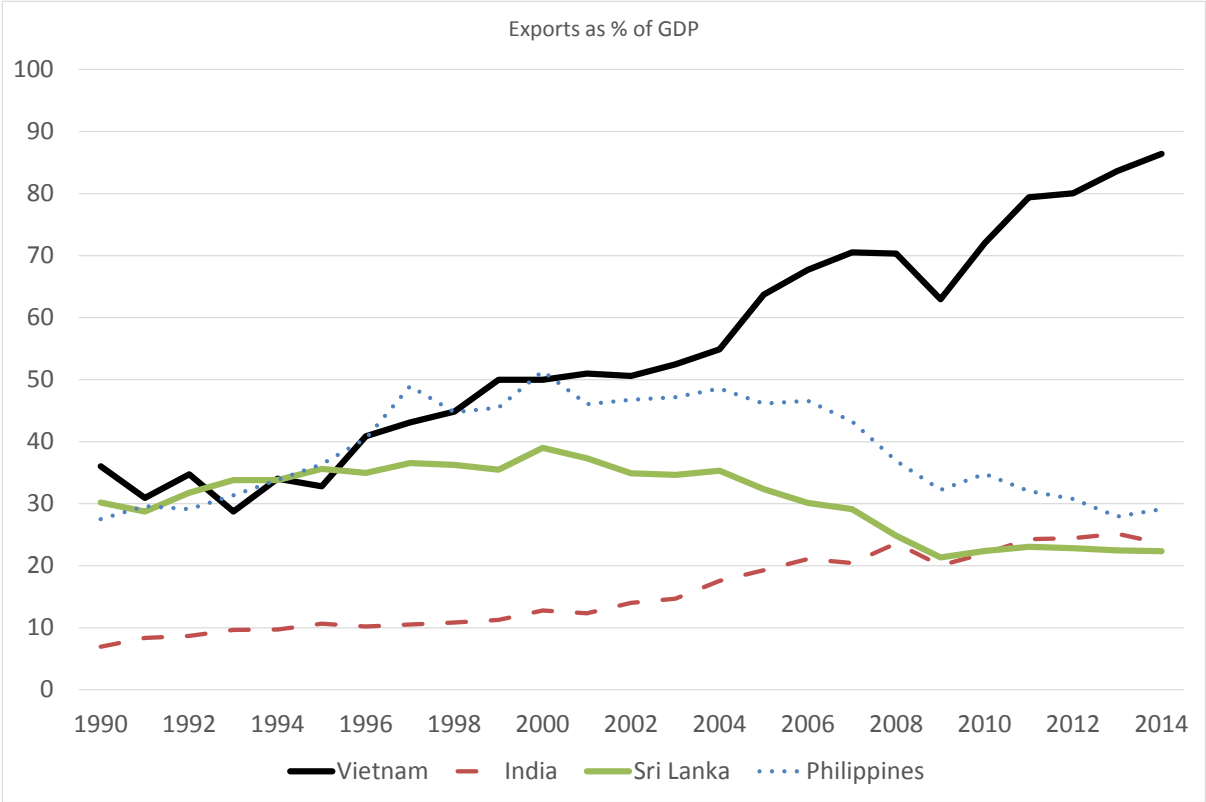
Source: IMF

Figure 2: Growth rate of GDP, per cent



Source: NCSEIF Model databank[1]

Figure 3: Exports as a share of GDP



Source: World Bank

The mid-1990s saw particularly rapid growth as the economy moved towards a freeing up of key markets. Major progress was possible as the economy opened up to

[1] Data was collected and generated by GSO, in the "Building socio-economic analysis and forecast information system" program of National Centre for socio-economic Information and Forecast.

the outside world. There was a temporary slowdown in 1999 as a result of fall-out from the Asian financial crisis. Government control of the economy and a nonconvertible currency had provided Vietnam with some insulation from the more severe impact experienced by other countries in East Asia. However, the crisis itself exposed serious structural inefficiencies in Vietnam which needed to be addressed – to shift to a more market based economy, reducing government control of major sectors such as the banking system, enterprises, and foreign trade. The early years of the 2000s saw a return to rapid growth. The growing openness of the economy to trade, combined with the rapid growth in the world economy proved particularly beneficial for Vietnam.

While the Vietnamese economy saw a slowdown as a result of the great recession in the developed world economies, a combination of support from domestic fiscal policy and monetary expansion meant that the economy continued to grow quite rapidly between 2010 and 2014 (with the exception of 2012). The fact that growth was also sustained in key middle income economies, such as China, was also helpful to the Vietnamese economy.

A particularly striking feature of the Vietnamese development experience has been the transformation of the country over the last 20 years from being a reasonably open economy like Sri Lanka or the Philippines to being extremely open today (Figure 3).

India, too has moved from being a very closed economy to the current situation where exports account for over 20% of its GDP. However, this still leaves it as quite a closed economy. Sri Lanka, which had a rather similar degree of openness to Vietnam in 1990, is actually less open today than it was 25 years ago. The degree of openness of the Philippines has also remained relatively unchanged over time. This makes the change in the profile of Vietnam all the more striking.

While foreign direct investment has played some role in this change, the bulk of exports originate in domestic firms. The clothing sector is very important as an exporter. However, exports of oil and agricultural produce are also important. (None of the other three countries featured in Figure 3 are exporters of energy.) Finally, Vietnam is an important destination for tourism, a business that is likely to grow rapidly over the rest of the decade.

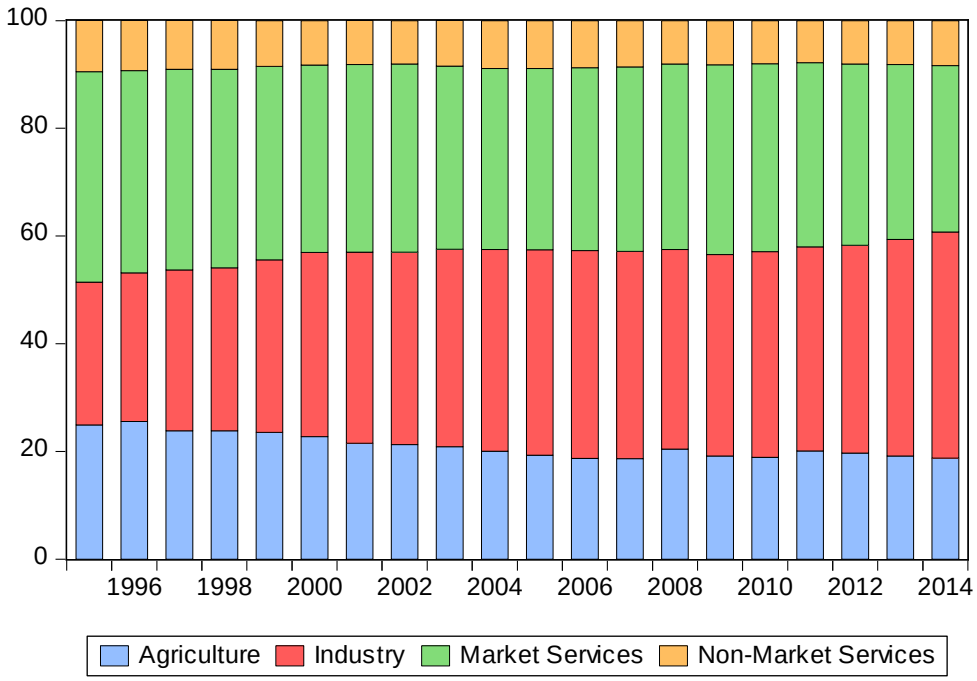
The significance of the high degree of openness of the economy is that Vietnam today is very much affected by what happens in the world economy. By plugging in to the growth in the rest of the world Vietnam has been able to grow and develop new industries leading to the relatively high rate of growth experienced and the rapid improvement in living standards, as seen in Figure 1. However, it does leave it more open to shocks to the wider world economy than was the case in the late 1990s.

3. Structure of the Economy

In 1995 the agricultural sector of the economy accounted of around 25% of GDP, which compares with around 18% today (Figure 4). By contrast the transformation of the economy has involved major growth in the share of the industrial sector in the economy, from 27% in 1995 to 42% today. This reflects the move to an open export based economy over the 20 years.

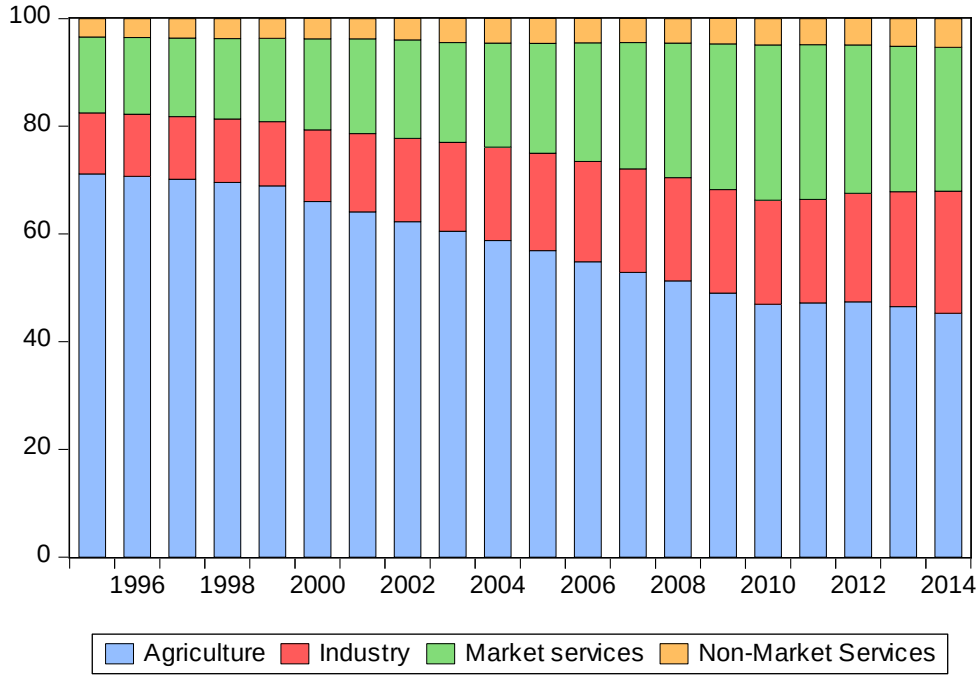
The market services sector also diminished in importance: in 1995 it accounted for just under 40% of output but today it accounts for only just over 30% of output. The non-market services sector has maintained a largely unchanged share of output over the period – around 9% of GDP.

Figure 4: Output by Sector, share of total output, %



Source: NCSEIF Model databank

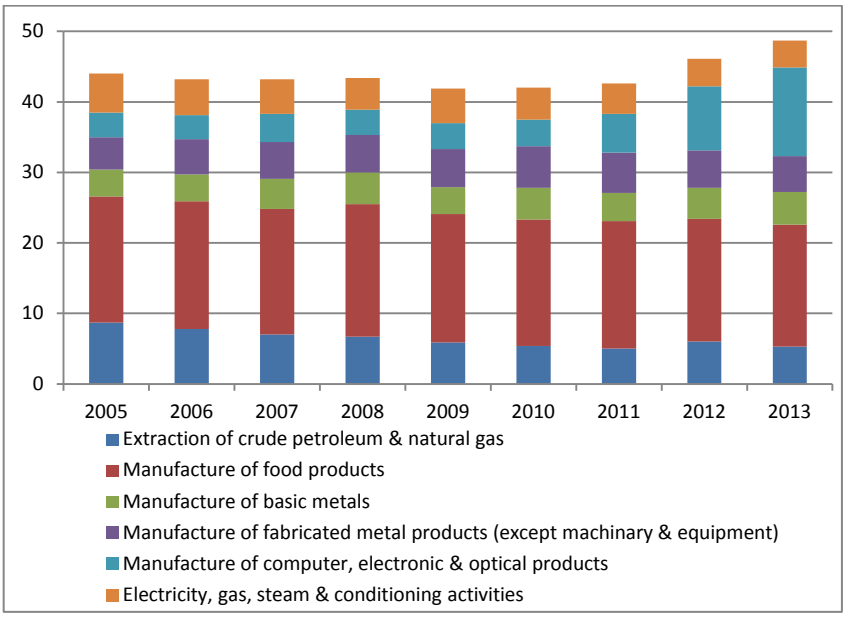
Figure 5: Employment by Sector, share of total, %



Source: NCSEIF Model Databank

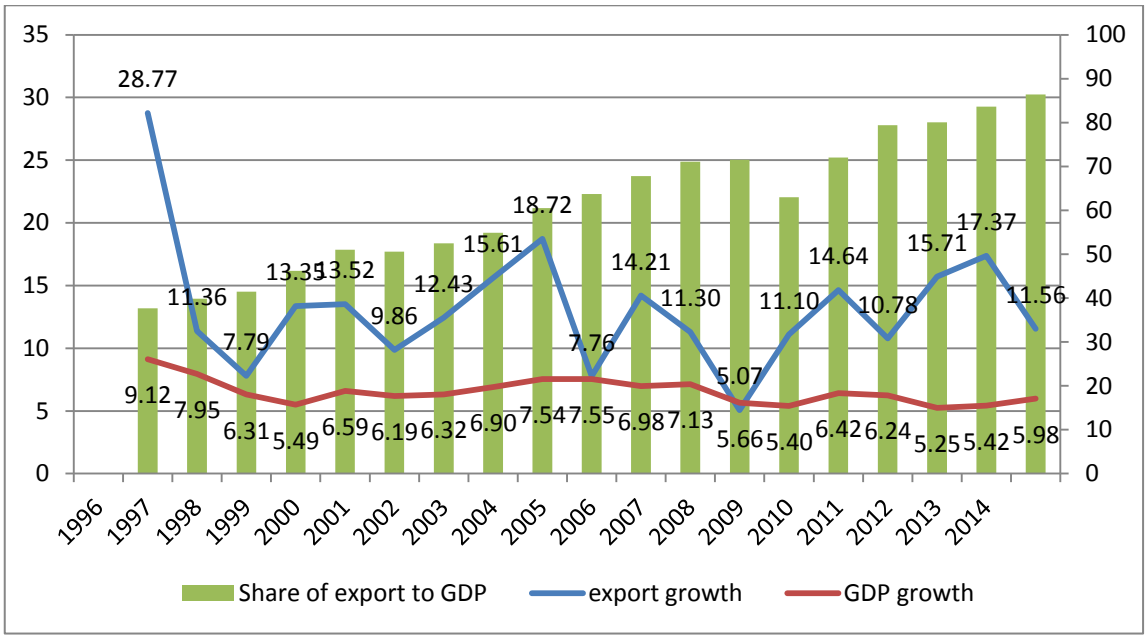
However, while agriculture's share of output has shown only a small fall over the last twenty five years, this contrasts with a dramatic fall in the share of employment accounted for by the sector (Figure 5). In 1995 over 70% of the labour force was employed in agriculture whereas today it is around 45%. While the decline in the share of employment in the agricultural sector has been dramatic, it is still over twice the share of agricultural output in GDP. This reflects the very low productivity in the sector, with productivity improvements coming primarily from the decline in employment in the sector. The industrial sector only employed 11% of the labour force in 1995 whereas today it employs around 23% of the labour force. This is still significantly smaller than its share in GDP reflecting the high productivity of the sector. The share of employment accounted for by market services has also increased over time from 14% in 1995 to 27% in 2014. There has been a small increase in the share of employment accounted for by the non-market services sector.

Figure 6: Composition of Industrial Output, share of total output, %



Source: NCSEIF Model Databank

Figure 7: Exports and GDP



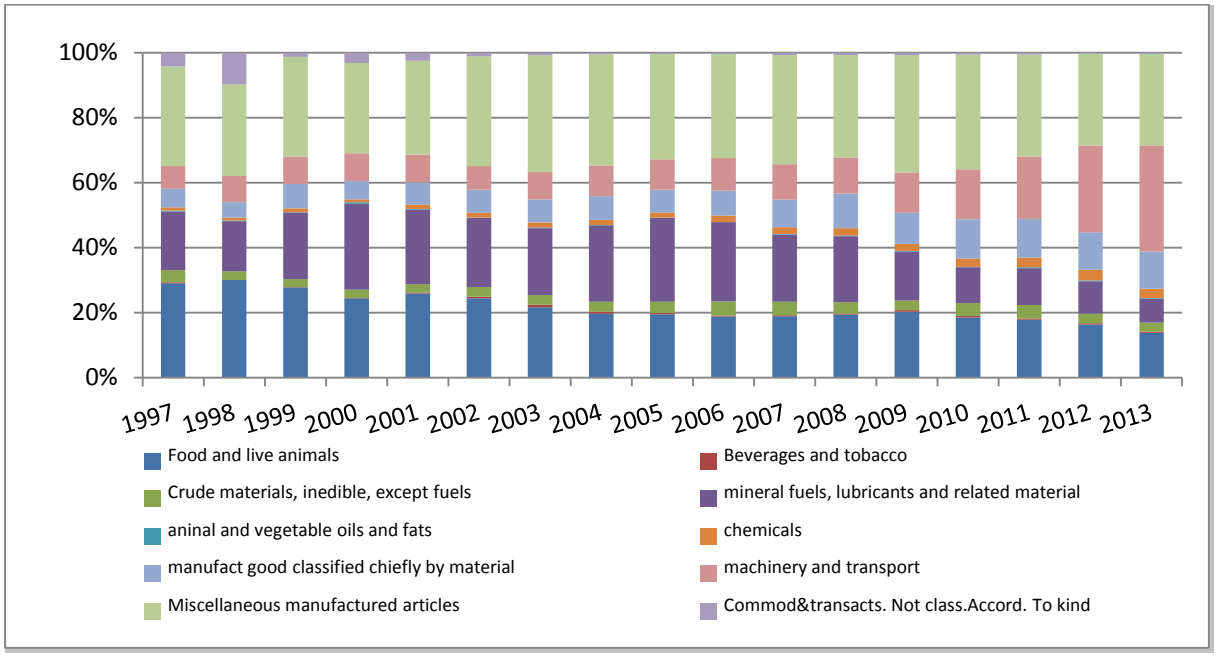
Source: NCSEIF Model Databank

Figure 6 shows that manufacture of food products accounted for the largest share of industrial output in recent years (about 17-18% in total). The second largest industry is manufacturing of computer, electronic & optical products, which accounted for under 4% of output in 2005, but accounted for 13% of output in 2013. As a result, high tech exports accounted for 28% of Vietnam's manufactured exports in 2013, up from 5% in 2005 (World Bank,Databank). This contrasted with 8% for India and under 1% for Sri Lanka. While most of this output is assembly work, this is

an important development, marking a move to more sophisticated production processes in the Vietnamese manufacturing sector. Foreign direct investment is important in the growth of this sector. Extraction of crude petroleum & natural gas, which accounted for 9% of output in 2005, is of declining importance, accounting for 5% of output in 2013.

The Vietnamese economy has become steadily more open over time as the growth rate of exports was almost always higher than the growth rate of GDP. Thanks to the high growth rate of exports, the contribution of exports to GDP increased through time from just above 40% in 1997 to almost 90% in 2014 (Figure 7). It is generally accepted that the growth of exports has been a major contributor to the rapid growth in GDP, leading the transformation of the Vietnamese economy.

Figure 8: Structure of Vietnam Exports by Commodity, % of total merchandise exports



Source: uncomtrade.un.org

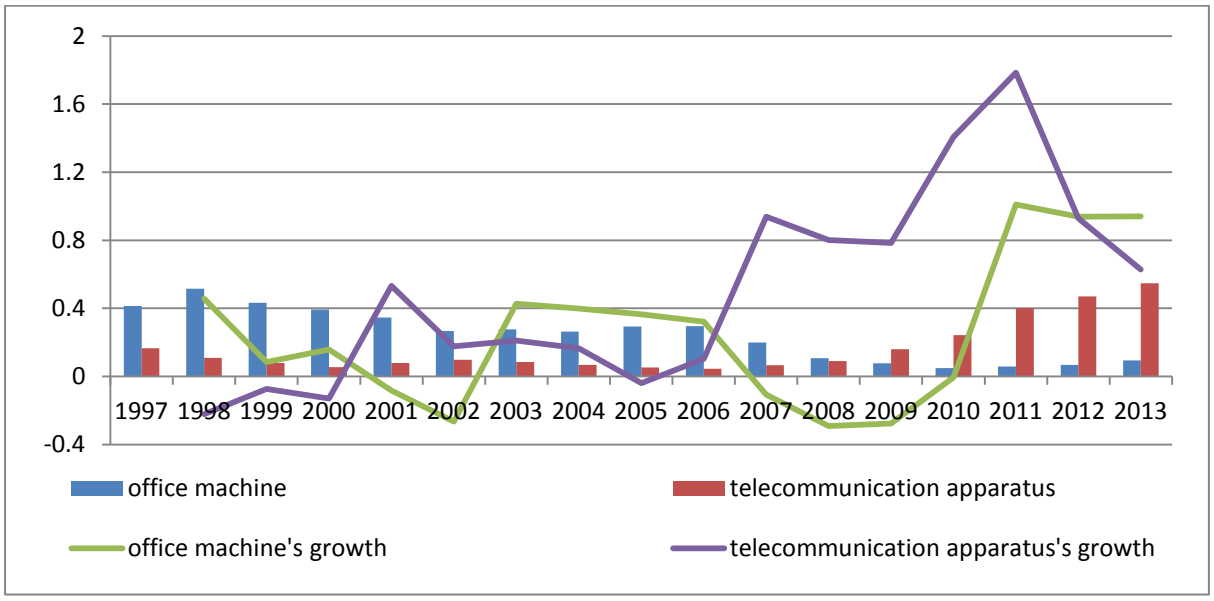
There are 3 commodity groups that dominate Vietnam's exports: food and live animals; machinery and transport and miscellaneous manufactured articles, with the proportions respectively 14%; 32% and 28% in 2013. There has been a major change in the composition of exports over time with the increasing share of manufactured products and the decreasing share of food and live animals exports. This reflects the growth of new sectors in the economy, discussed above, especially sectors producing more high tech products. Particularly, the share of machinery and transport products jumped significantly through time, from only 9% in 1997 to 32% in 2013 – it now accounts for the largest proportion of Vietnam exports.

The reason for this surge in exports of machinery and transport products is the growing importance of the manufacture of office machinery and telecommunication

apparatus products, particularly of telecommunications apparatus. Before 2009, although there was rapid growth in the export of telecommunication products, because of the small absolute size of the sector, it made only a limited contribution to the growth of exports of machinery and transport products. However, from 2010, with the significant increase in FDI flows, its growth jumped to around 40% per year. These exports were mainly mobile phones and related components. As a result; the contribution of telecommunication products to the growth in exports also went up. Primarily because of the growth in exports of telecommunication products, the share of machinery and transport in total Vietnam exports also went up so that it is now the most important single export product of Vietnam.

However, it should be noted that the value added in this sector is low as it is largely assembly work, with most of the components being manufactured elsewhere and imported. However, experience elsewhere suggests that over time value added in the sector may rise.

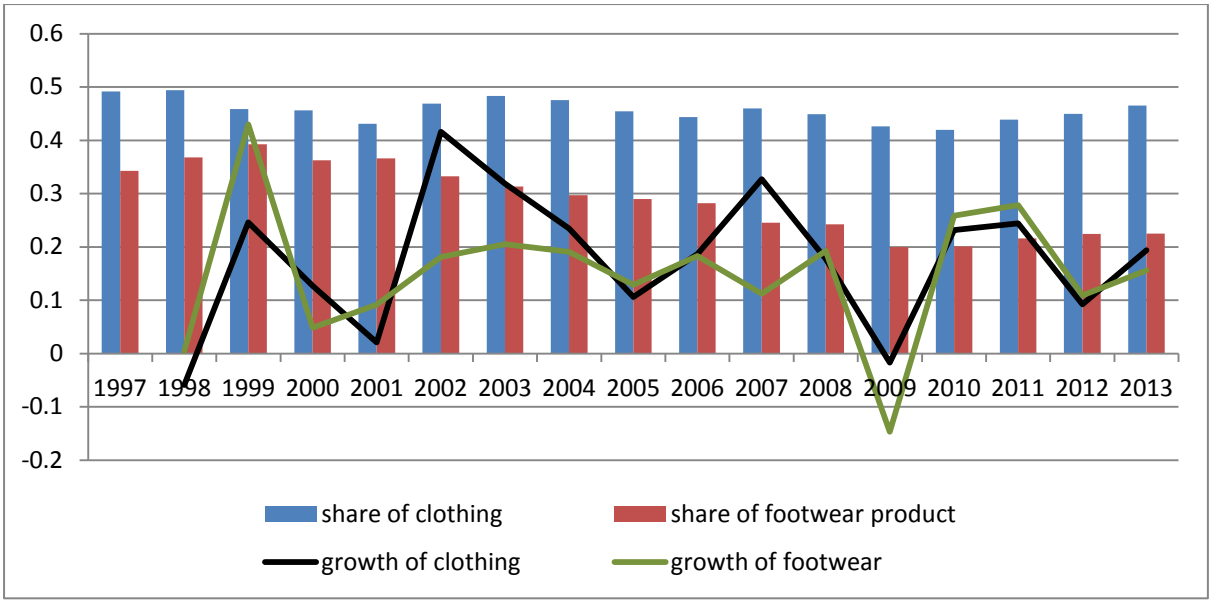
Figure 9: The share of office machine and telecommunication apparatus in total SITC 7 and their growth



Source: GSO

Clothing and footwear is the second most important category of exports. However, it can be seen that more recently (2012 and 2013) the growth in exports of this sector has slowed.

Figure 10: The share of clothing and footwear product in total SITC 8 and their growths (%) from 1997 to 2013



Partly as a result of the change in structure of exports, the composition of Vietnam's trading partners has changed over time (Table 1). Whereas twenty years ago Japan was the major export market, over the last decade the US has become the single biggest market for Vietnam's exports, accounting for 18% of exports in 2013. However, the export markets of Vietnam are quite diversified.

The major EU economies account for over 12% of exports with China and Japan each accounting for around 10%. Other Asian markets are, taken together, of considerable importance, accounting for around a quarter of all exports.

However, because these markets are, in turn, quite dependent on the growth in the wider world economy, the factors driving the growth in Vietnam's markets are probably less diversified than the Table would suggest. As discussed later, this is reflected in how the demand for Vietnam's exports is modelled.

Table 1: Major Export Markets, Share of Merchandise Exports, % partner of Vietnam export

	1997	2000	2005	2008	2009	2010	2011	2012	2013
Others	26.47	20.37	17.4	20.76	22.96	23.96	23.87	22.6	25.24
USA	3.12	5.06	18.27	19.09	20.28	19.74	17.52	17.2	18.09
Japan	18.24	17.79	13.38	13.58	11.25	10.7	11.45	11.41	10.26
China	5.16	10.61	10.01	7.75	9.6	10.72	11.99	11.22	9.99
Rep.of Korea	4.54	2.44	2.05	2.88	3.69	4.28	5.03	4.88	5.06
Malaysia	1.51	2.86	3.17	3.26	3.15	2.9	2.86	3.93	3.78
Germany	4.48	5.04	3.35	3.33	3.35	3.29	3.48	3.58	3.59
Hong Kong	4.69	2.18	1.09	1.36	1.84	2.03	2.28	3.24	3.12
United Kingdom	2.89	3.31	3.13	2.51	2.36	2.33	2.48	2.65	2.8
Australia	2.51	8.79	8.39	6.77	4.17	3.74	2.69	2.8	2.64
Thailand	2.56	2.57	2.66	2.07	2.34	1.64	2	2.47	2.33

Netherlands	2.9	2.7	2.03	2.53	2.41	2.34	2.22	2.16	2.23
Cambodia	1.19	0.98	1.71	2.46	2.07	2.17	2.6	2.56	2.22
Singapore	13.24	6.12	5.91	4.35	3.69	2.94	2.22	2.07	2.04
Indonesia	0	1.72	1.45	1.21	1.34	1.99	2.44	2.06	1.9
Italy	1.29	1.51	1.45	1.61	1.43	1.36	1.58	1.64	1.74
France	2.59	2.64	2.01	1.56	1.46	1.53	1.71	1.89	1.67
Philippines	2.62	3.3	2.56	2.93	2.6	2.36	1.59	1.64	1.31

Source: GSO

4. The Vanmieu model of the Economy

To better understand the behaviour of the Vietnamese economy a macro-economic model – Vanmieu – has been developed and estimated using data from 1995 to 2012[2].

Given the relatively underdeveloped state of the economy in the mid-1990s, there are significant problems in developing a consistent data set covering all key variables. In particular there are no official data on the income side of the national accounts. However, using some simplifying assumptions, it has been possible to fill some of the key gaps and, as a result, we have been able to estimate the model for many of the key relationships.

Because of the openness of the economy a key section of the model is that determining exports. While agricultural exports are treated as being determined by supply (agricultural output), manufactured exports are a function of world demand and of the competitiveness of the Vietnamese economy relative to the rest of the world (proxied by the price of output in Vietnam relative to China). Export prices are assumed to be largely externally determined. There are no firms in Vietnam which are world market leaders that can set their prices based on domestic costs. Firms producing in Vietnam must at least match the cost of production in competitor countries; if they don't they cannot survive in export markets. For foreign firms operating in Vietnam, especially in the growing high tech manufacturing sector, their decision to locate in Vietnam is driven by its competitiveness. They set their prices based on international market conditions without reference to the cost of production in Vietnam. Provided that the price set on the world market is greater than the cost of production they are profitable.

The non-agricultural market sector of the economy, made up of industry and market services, is modelled as two separate sectors. In each case firms are assumed to minimise their cost of production and to choose their stock of capital and labour (employment) to minimise the cost or production, given the price of these two inputs. Potential output in each sector is a function of the capital in place and employment. Actual output is determined by demand – primarily exports in the case of the

[2] The model is documented by Chi, Fitgerald, *et al.*, 2015, "The Vanmieu Model of the Vietnam economy".

industrial sector. The gap between the actual output and the potential output affects decisions on investment. Firms choose the capital stock that will minimise the cost of the output that they can sell profitably and they adjust the capital stock gradually towards its optimum level.

Agricultural output is not modelled separately, but is treated as effectively being exogenous. Non-market sector output is also exogenous.

Output and employment determine household income. Consumption is a simple function of disposable income. While interest rates have some impact on household consumption in the model, it is not very significant. As mentioned above, investment is determined by firms to minimise the cost of their chosen level of production. Investment by the non-market sector is exogenous.

A major difference between the model of Vietnam and that of a developed economy is that there is no Philips curve – wages roughly rise in line with prices. Using the available data no evidence was found that wages were sensitive to the degree of pressure on the labour market. This may be due to the unsatisfactory nature of the data or it may be due to the high proportion of the labour force that is self-employed. A key mechanism in the model is the release of labour from the agricultural sector, which roughly matches the change in labour demand in the non-agricultural sector. This reflects what is actually happening on the ground. When combined with a relatively high level of probable underemployment in the services sector, it means that the unemployment rate is very low and does not vary significantly with conditions in the labour market. In such an economy other measures of labour market tightness, which might affect wage rates, may be more appropriate.

Because we have not been able to capture in the model the effects of excess demand on wages (or prices) the model must be used with caution. Economic theory suggests that if demand exceeds potential output there will be inflationary consequences. The absence of this channel must be taken into account when using the model for policy simulations.

Consumer prices are a function of the price of domestic output and oil prices. While indirect taxes don't appear in the equation, in using the model to simulate changes in indirect taxes their effects on prices needs to be included in an ad hoc manner.

The labour force is exogenous. Ideally labour force participation should be endogenous but this mechanism is probably overshadowed by the importance of labour release from agriculture. In the present version of the model human capital effects have yet to be developed. Because of their importance it is hoped to include them in the next version of the model. In the absence of their formal inclusion, ad hoc adjustments can still be made to simulations to take the effects of rising levels of human capital into account.

The government sector of the model endogenises key sources of tax revenue as a function of a tax rate and a tax base variable. This means that tax revenue adjusts to changes in the level of economic activity. Government consumption and transfers are treated as exogenous. Government investment and the resulting capital stock does not affect the supply potential of the economy in this version of the model.

In this version of the model the government debt and debt interest is not properly endogenised because of problems with the data. One option in using the model is to target a given level of government borrowing as a share of GDP and to adjust the rate of tax to ensure that the economy tracks this specified target. However, in the results discussed later in this Chapter this option is not used.

As outlined earlier, the model effectively determines output in the economy as a function of the profitability of producing in Vietnam. The difference between output and final demand is the volume of imports. Thus imports are residually determined, ensuring that the volume of GDP on an output basis equals the volume on an expenditure basis. The value of GDP on the expenditure basis is equated to the value on an output basis by residually determining profits in the economy. This means that factors that add to demand (e.g. fiscal policy) or factors that affect the profitability of producing in Vietnam (a rise in domestic costs) results in higher imports and a deterioration in the current account of the balance of payments. Obviously the current account improves if demand falls or profitability rises.

In this version of the model the monetary / financial sector is not modelled and the exchange rate is exogenous. Initial research showed up problems with the data and also problems in establishing stable relations on which to build a financial/monetary sub-model. Further work is required to progress this.

5. Vietnam – Growth in an Open Economy

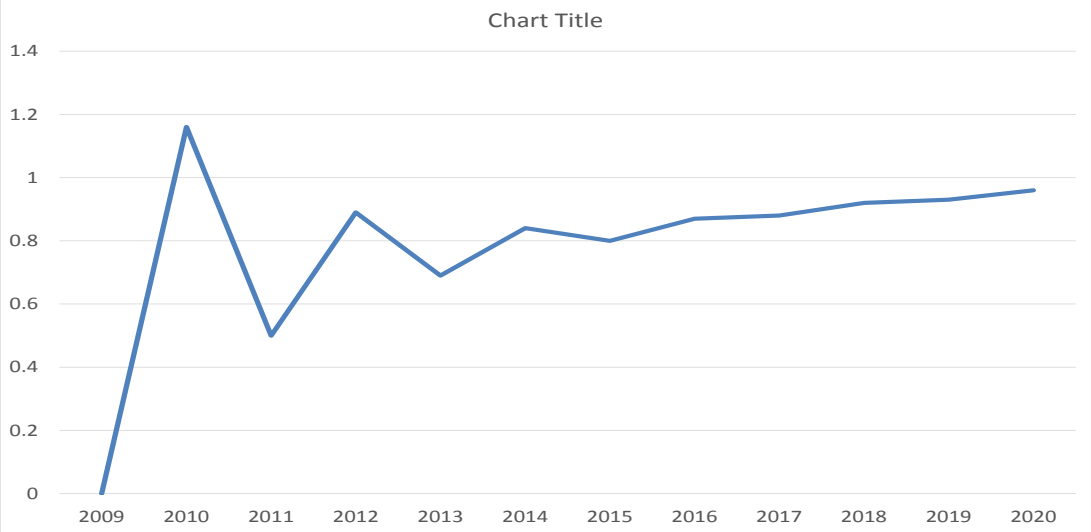
As discussed in Section 2, the openness of the economy means that it is dependent on growth in the wider world economy to maintain the rapid rise in living standards. The Vanmieu model of the economy treats manufactured exports as a function of world output (proxied by GDP in the US and China) and Vitenam's competiveness relative to certain other middle income economies. In the model, world output was raised by 1% in 2010 by increasing both Chinese and US GDP by one percentage point. The resulting impact on Vietnamese GDP is shown in Figure 11.

In the long run GDP is increased by roughly the increase in world output, measured in this way. However, because Chinese GDP is rising more rapidly than GDP in the developed world, the relatively higher weighting of Chinese GDP in the model implies a somewhat more rapid rise in Vietnamese GDP than the crude average of world GDP. This reflects the experience over the last 15 years.

Of necessity, in any model some simplification is necessary – hence the concentration on GDP in China and the US. However, as shown in Figure 6,

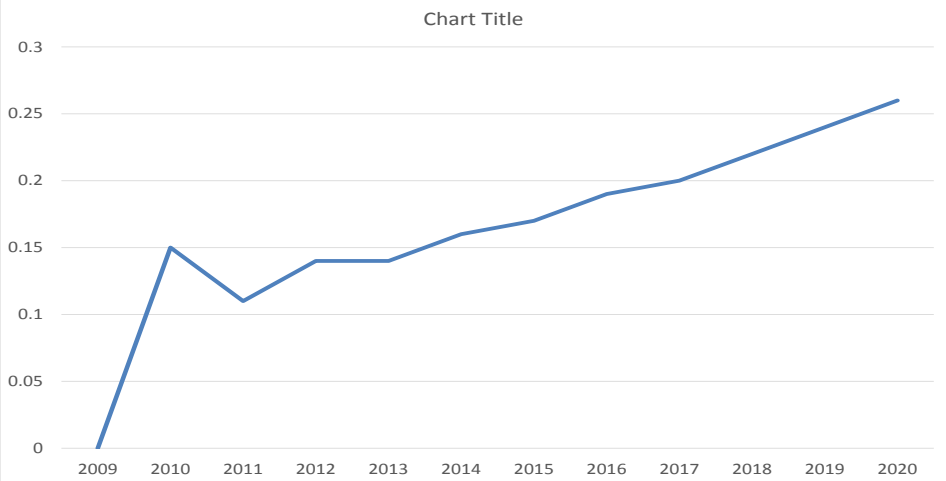
Vietnam's export markets are much broader than those two countries and, in the future, growth in Vietnam will be affected by the progress of the economies which constitute its major markets.

Figure 11: Impact of a 1% increase in World GDP on Vietnamese GDP



Source: Estimated by VANMIEU model

Figure12: Impact of a 1% Increase in Prices of Foreign Competitors



Source: Estimated by VANMIEU model

An important feature of the success of the Vietnamese economy has been the gradual improvement in its competitive position. In the Vanmieu model, as outlined above, manufactured exports are sensitive to changes in the overall price level in Vietnam relative to its competitors. There was some improvement in the competitiveness of the Vietnamese economy relative to competitors such as China in the late 1990s which helped kick start the process of rapid growth in exports. Since then Vietnam has maintained its competitive position relative to key competitors.

There are also signs that stresses in the Chinese economy arising from congestion and lack of infrastructure in major cities is affecting the Chinese labour market. This, in turn, is encouraging a relocation of activity to Vietnam, in particular activity by foreign multinational enterprises.

In the model, as shown in Figure 12, foreign prices were raised by 1% in 2010 (and held 1% higher over time) to examine the potential impact on the Vietnamese economy of such an improvement in competitiveness. Initially it raised GDP by around 0.15%. However, as new investment is undertaken to exploit the improved position of the Vietnamese economy, the improvement in GDP would tend to increase, rising to around 0.25% after a decade.

Of necessity, a macro-economic model captures in a stylised way the factors affecting the underlying competitiveness of an economy. Many more factors affect the success of domestic producers in selling on foreign markets than are specifically included in the model. The model focuses on the competitiveness of manufactured exports. However, over time the growth of services exports, especially of exports of tourism, will also be important. Evidence from other countries indicates that the tourism market is particularly sensitive to price pressures.

6. The Labour Market

The population of Vietnam is growing at around 1% a year. However, the total fertility rate (TFR), a measure of the number of children that a woman might have over her lifetime, has halved over the last 25 years from over 3.5 to around 1.7 today. If this TFR were to continue indefinitely the Vietnamese population will eventually peak and then begin to fall. Nonetheless the demographics are much more favourable than for many developed economies and also when compared to China.

The old age dependency ratio is very low and the child dependency ratio is also falling (Table 2 and Figure 13). The youth dependency ratio was exceptionally high in 1979 after decades of war. Even in 1999 the youth dependency ratio was 55%. However, with the falling birth rate, rising life expectancy and the return to a more normal post-war population structure, the youth dependency ratio has fallen to around 36%. It is likely to fall even further to around 33% by the end of the decade. This will free up resources which could be used to improve the educational system.

Table 2: Share of the population under and above working age relative to working age population (%)

	1979	**1989**	**1999**	**2009**	**2014**	**2020**
<15/(15-65)	80.6	69.6	55.2	35.4	36.8	32.9
>=65/(15-65)	8.9	8.9	9.6	9.3	9.0	10.3
(<15+>=65)/(15-65)	89.50	78.57	64.77	44.68	45.77	43.27

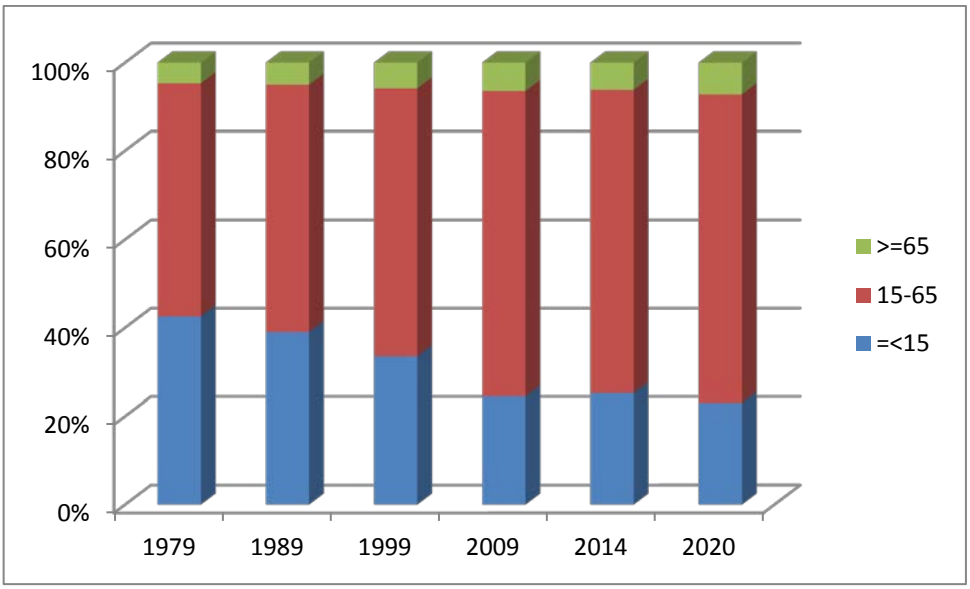
Source: 1979, 1989, 1999 and 2009 are from each 10-year census of GSO Vietnam, 2014 and 2020 are the forecast from GSO Vietnam.

Table 3: Vietnamese Population by age group (thous. ppls)

	1979	1989	1999	2009	2014	2020
Under 15 years old	22441.7	25106.64	25644.58	20989.59	20993.26	22118
From 15 to 65 years old	27832.0	36050.56	46486.54	59337.45	57123.21	67129
Above 65 years old	2468.3	3218.80	4465.59	5519.96	5151.93	6931
Total	**52742**	**64376**	**76596.7**	**85847**	**83268.4**	**96178**

Source: 1979, 1989, 1999 and 2009 are from each 10-year census of GSO Vietnam, 2014 and 2020 are the forecast from GSO Vietnam.

Figure 13: Age Structure of the Population



Source: GSO

The old age dependency ratio is very low at under 10% and is likely to remain very low for some time to come. However, with life expectancy in Vietnam today similar to that in developed economies, in the long run old age dependency will rise to a much higher level. However, for the next decade or two this will not be a major problem.

Thus the Vietnamese economy faces a prolonged period when the share of the active population in the total population will be very high. This provides the opportunity to put in place key infrastructure which will be important for the long-term welfare of the population.

The movement of the population from agriculture to industry has meant a major growth in the population of cities in Vietnam. In the 1990s the rate of growth was around 3.5% a year. However, with the urban population in the major cities already quite a high share of the total population, the rate of growth has slowed to 3% a year.

Nonetheless, providing the necessary infrastructure to accommodate such a rapidly rising urban population will require a continuing high rate of investment. As some of the essential infrastructure is of a common good nature (sanitation, roads, public transport), this will put continuing pressures on public sector budgets.

As discussed in the Chapter by Phuong, Kelly and McGuinness, the human capital of the labour force is gradually rising. This has an important potential impact on productivity. The research described in the Chapter indicates that the productivity of better educated workers is much higher in foreign owned firms. Thus the combination of rapid growth in foreign direct investment with a growing share of well educated workers should see a significant increase in productivity.

In the long-term it will be important that the productivity benefits of the foreign sector spreads to domestic firms. One channel through which this will take place is through the movement over time of workers that have gained experience in the foreign owned sector to work for domestic firms. However, because of the higher pay available in the foreign sector this may take some time.

An important feature in understanding how a developed economy such as Ireland or the US works is the behaviour of unemployment and how it, in turn, affects the rate of increase in wages. However, in the case of the Vietnamese economy measured unemployment is very low. Instead, as in most developing economies, the key issue is underemployment, especially in the agricultural and the market services sector.

In modelling the Vietnamese economy, the importance of this feature has been taken into account. The fall in employment in the agricultural sector is modelled as being roughly equal to the increase in employment in the non-agricultural sector (services and industry). When jobs are created, especially in industry it allows more workers to move to where the industry is located, very often in an urban area. While the shift from underemployment in agriculture to employment in industry should raise overall productivity in the economy, the extent of the productivity improvement depends on the nature of the work obtained in industry or market services. In turn, this will be affected by the education and training of the new employees. As Phuong et al. show, it is also affected by the nature of the firms where the employees work: foreign owned firms have higher productivity.

This process whereby underemployed labour is released from agriculture to work in industry (or market services) was completed in Singapore in the 1970s. It is still continuing in China although, as discussed above, the Chinese economy is having problems absorbing the movement of the rural population to urban areas. It will continue to be important in Vietnam for at least the next decade. To the extent that the workers move from being underemployed to being employed productively in the industrial and services sector there will be a positive effect on productivity.

Data on wage rates are limited so it is difficult to model their behaviour. In any event, given the large stock of underemployed labour, increases in employment may

have a limited effect on wage rates. Thus the mechanism whereby domestic costs may be affected if the economy operates above capacity, are difficult to identify. Nonetheless, if the economy grows too rapidly, above potential, then it is certain that domestic costs will rise, whether it is wage rates or the cost of domestically produced goods and services.

7. Inflation and the Balance of Payments

In the model the rate of inflation in consumer prices is a function of the price of domestic output and of oil prices. However, we know that a key determinant of the domestic rate of inflation is monetary policy. Monetary policy can affect inflation and the overall level of activity through its effects on the rate of increase in credit and, very important, on the exchange rate.

The fact that the rate of inflation has been higher in Vietnam than in some of its neighbours in south-east Asia to some extent reflects a different approach to monetary policy. There have also been exceptional surges in the rate of inflation in 2008 and 2011. These spikes in the rate of inflation can carry a significant economic cost, even though they do not seem to have had a long-term impact on inflation expectations.

As discussed earlier, in modelling the economy it was difficult to establish an effect on inflation from actual growth running ahead of the growth in potential output. Nonetheless, such an effect is almost certainly present and it highlights the importance of running an appropriate counter cyclical fiscal policy in the medium term.

As discussed, in the model the current account of the balance of payments reflects excesses in demand over supply (or vice versa). Fiscal policy can have a significant impact on the deficit / surplus, as indicated by the simulations using the model.

8. The Public Sector

Fiscal policy is considered as one of two important tools which the Vietnamese Government uses to manage the economy. Major institutional change was implemented in the Budget Law, passed in 1996. The law provided specific rules about cost estimation and budgetary allocation by different types of revenue and expenditure.

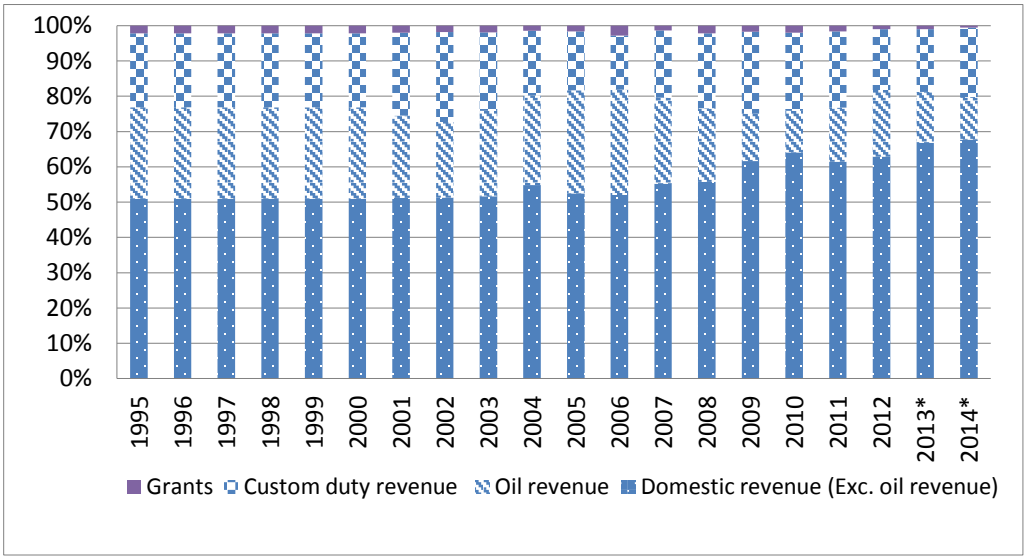
Over a decade, budget revenue has increased by an average of 20% per year, and its share of GDP has also increased from 19% in 1995 to 27% in 2010, though its share had declined to 21% in 2014. However, this ratio is still high when compared with other Southeast Asian countries. In general, State budget revenue has a close relationship with economic growth.

In Vietnam, budget revenue is classified into domestic revenue (including revenue from enterprises of state sector, non-state sector and foreign investment sector, tax and fee, revenue from lands and houses, others); oil revenue; custom duty

revenue and transfers. Domestic revenue accounts for the largest part of state budget revenue (average at 55% of total revenue and grants) (Figure 14), followed by revenue from oil (about 22% average) and revenue levied on import-export activities (20%).

A decade ago, both revenue from oil and customs duty also accounted for a large part of total. It was reasonably volatile as a revenue source, depending on factors outside the control of the Vietnam economy. It made budgetary forecasting difficult.

Figure14: Revenue sources (%)



Source: GSO, * preliminary number: GSO

However, from 2008 up to the present, revenue from crude oil has been decreasing, due to the downward trend in crude oil price and stagnant crude oil production (from 26% in 1995 to 12% in 2014). Revenue from other domestic sources has increased in proportion, from 50% in 1995 to 67.7% in 2014, which will provide a more stable basis for state budget revenue.

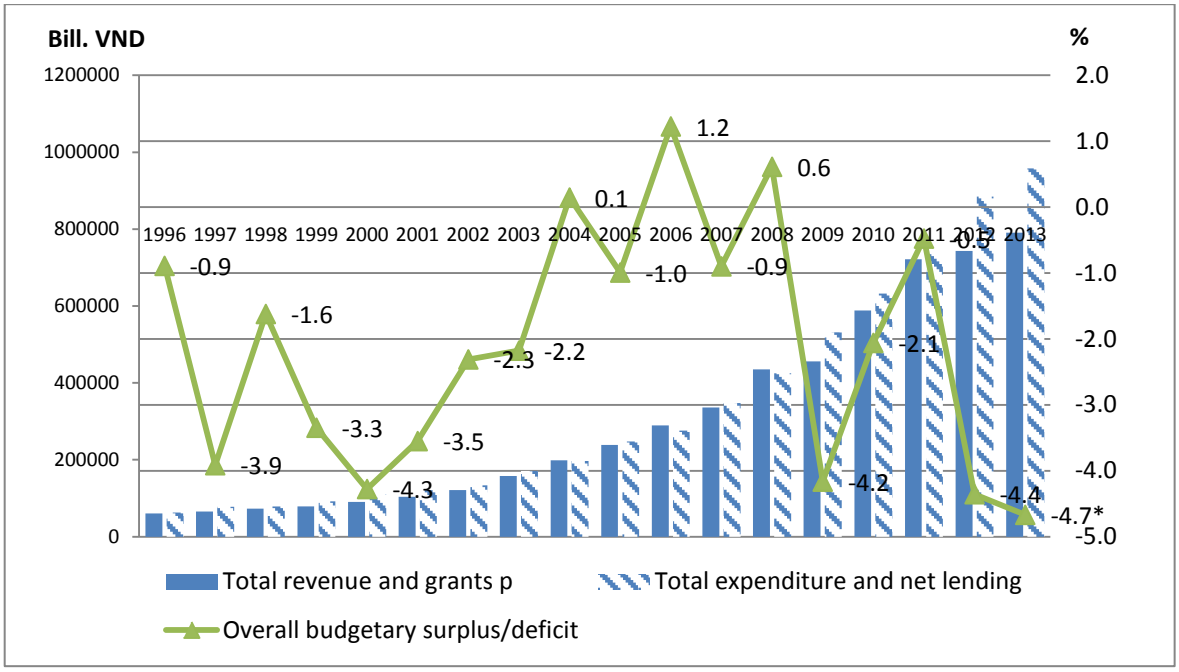
State budget expenditure grows at roughly the same average rate as revenue, but its share of GDP is higher than that of revenue: about 25% of GDP, one of the highest ratios in South-east Asian countries. There are concerns that the size of the gap between expenditure and revenue may have a negative impact on long-term growth prospects. Research suggests that that the size of the deficit (Figure 15) in the state budget is a cause for concern (15-25% of GDP[3]). There is also concern that the expenditure that is meant to facilitate growth is not deployed in an efficient manner – the state is getting bad value for money spent.

Budget expenditure is classified into current and capital expenditure, besides repayment for Government debt and additional financial reserves. Current expenditure (70% of total on average) includes expenditure on education, health, society, administration and welfare. Capital expenditure (30% of total on average) includes

[3] Phạm Thế Anh, "Government expenditure and economic development"

expenses for non-profit construction of infrastructure, investment and supports for State-owned enterprises, support development and assistance funds. However, capital has been accounting for a decreasing share of expenditure over the decade, from 35% in 2000 to 21% in 2013. Given the infrastructure needs of the rapidly growing economy this is a cause for concern. The lack of adequate infrastructure may prove a significant factor restricting growth over the coming decade.

Figure 15: State budget



Source: ADB Key indicators for Vietnam

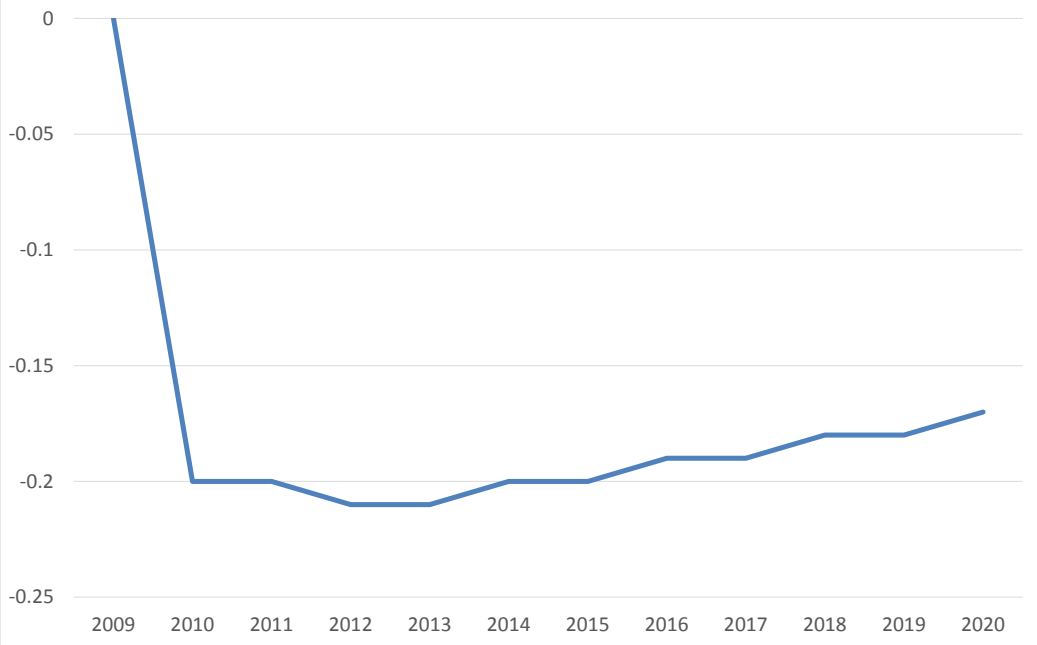
The Budget deficit has been increasing as a result of slowing revenue, while expenditure continued to increase. This reflects an economic slowdown and a reduction in tax revenue. Overspending is becoming a critical. It can be seen that Vietnamese government accepted the necessity of increasing the budget deficit to provide a fiscal stimulus to support growth. Meanwhile, there are also pressures to increase budget expenditure to pay for social security activities as well as to stimulate investment and consumption.

There are also wider issues, which are important for future growth, such as investment in infrastructure and the role of state owned enterprises in the development of the economy. While these are not covered in the current version of the model, their significance is discussed in the light of other research available on how the Vietnamese economy works (see the Chapter by Thuy, Morgenroth and O'Toole).

The Vanmieu model was used to consider the impact of a rise in the share of personal income going to the government as a result of an increase in the direct tax rate amounting to 1% of total income. Obviously this would have a deflationary impact on the economy. As shown in Figure 16 it would reduce the level of GDP by

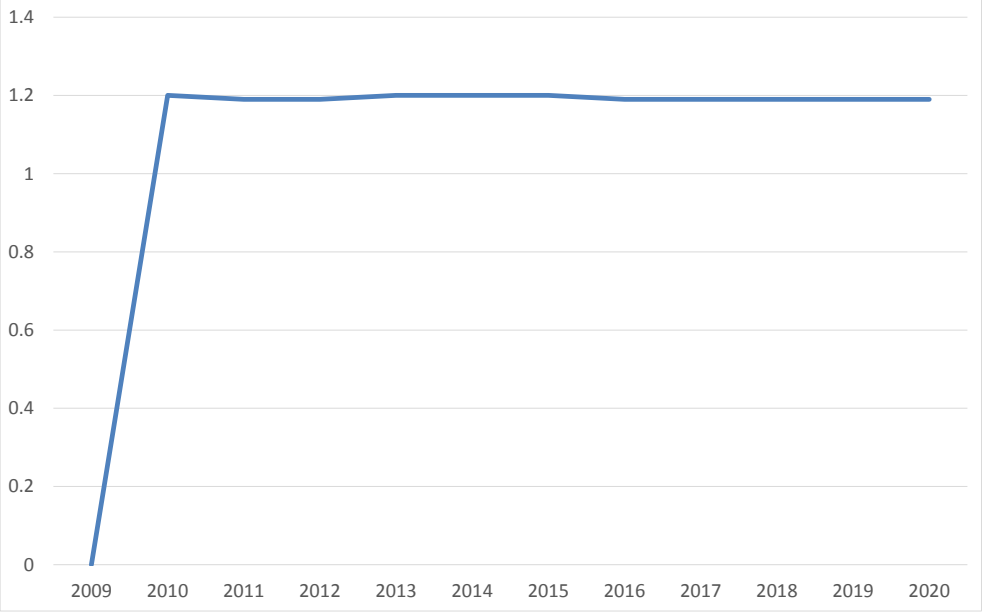
around 0.2 percentage points. It would also lead to a reduction in government borrowing by 0.8 percentage points of GDP. Because of the lower level of activity, the current account of the balance of payments would also improve by around 0.6 percentage points of GDP.

Figure 16: Effect on GDP of an increase in the Direct Tax Rate of one percentage point, change in GDP, %



Source: Estimated by VANMIEU model

Figure 17: Effect on GDP of an increase in government consumption amounting to one percentage point of GDP, change in GDP, %



Source: Estimated by VANMIEU model

Figure 17 shows the impact of an increase in government consumption amounting to one percentage point of GDP. The model suggests that this injection would add 1.2 percentage points to the level of GDP. It would also raise government borrowing by between 0.7 and 0.8 percentage points of GDP and eventually increase the balance of payments current account deficit by around 0.7 percentage points of GDP.

9. Productivity

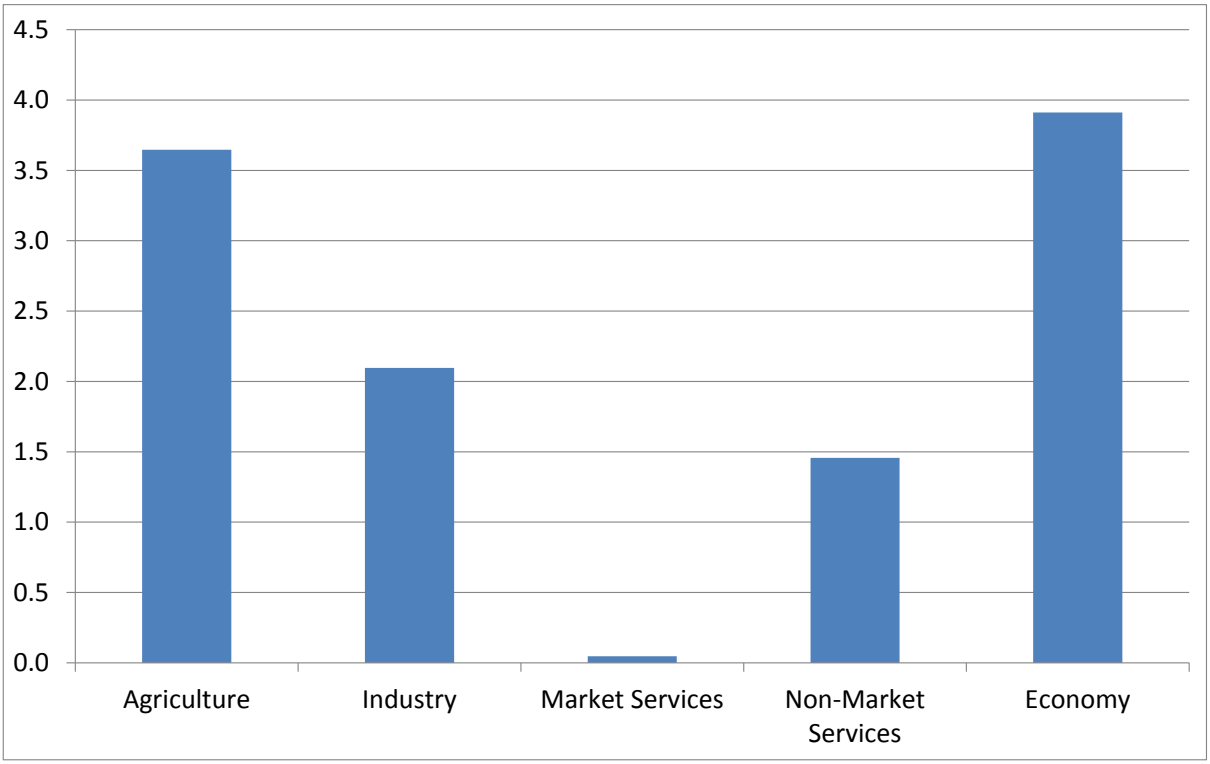
Looking at labour productivity for the economy as a whole (measured as output per person employed), progress over the 17 years 1995 to 2012 looks fairly satisfactory, with an average annual growth of almost 4% a year (Figure 18). However, when the performance is examined on a sectoral basis the results look less reassuring. Productivity for the economy as a whole grew at a higher rate than it did for any sector. This reflected the major benefits obtained by the movement of underemployed labour from agriculture to work in the rapidly growing industrial and services sectors of the economy.

Productivity in industry only rose by an average of 2% a year over the 17 years at a time of massive growth in the sector. While a continuation of the movement of underemployed labour from agriculture to industry would allow continued relatively high growth, in the long run, with relatively low productivity in industry, the growth in output would have to slow. This highlights the importance of policy measures to enhance productivity growth in industry in the future. This is discussed in the next Section.

The research by Phuong., Kelly and McGuinness, described in a Chapter in this book, shows how foreign direct investment is very important in increasing productivity. As this sector of the economy grows in importance it will have a wider impact on productivity in the manufacturing sector as a whole.

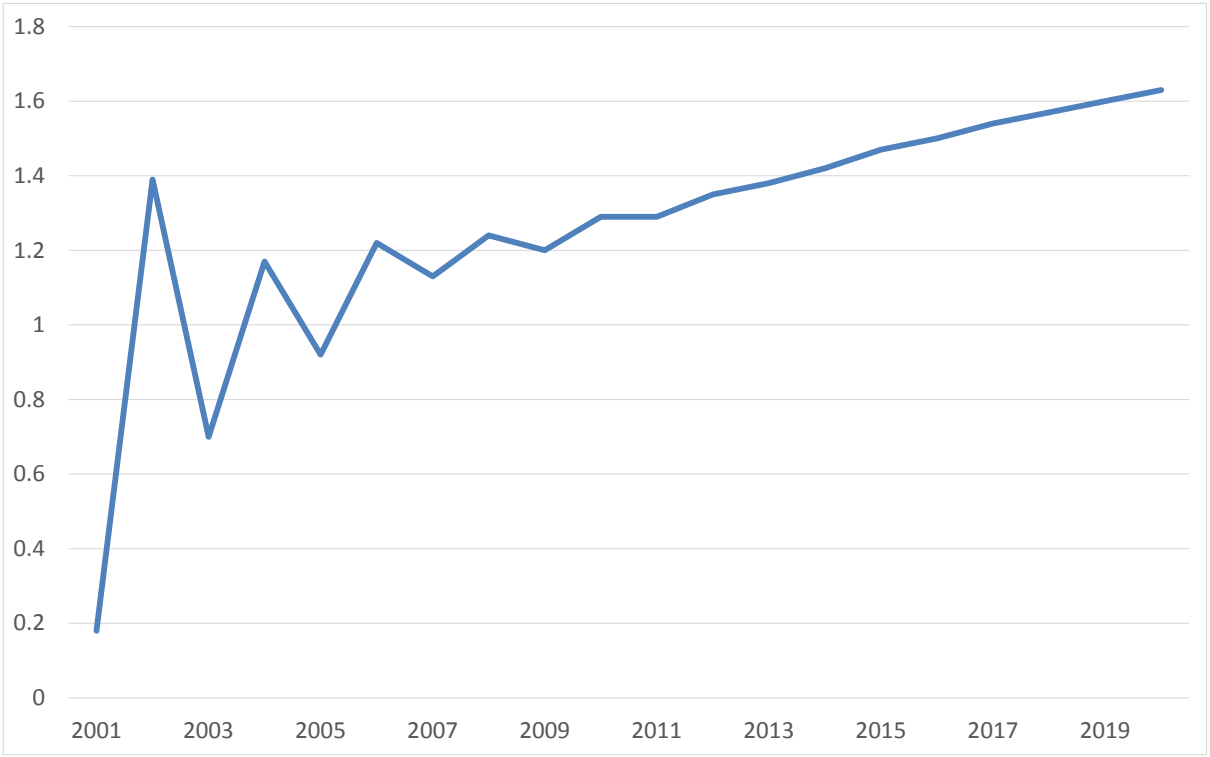
There was almost no growth in productivity in market services. This is not necessarily surprising. It is exceptionally difficult to measure productivity growth in such a sector. However, over time one would expect more rapid growth in higher value (higher productivity) sub-sectors of market services to result in a higher measured productivity for the sector as a whole. As yet this process is not apparent.

Figure 18: Labour Productivity by Sector, average annual % change 1995-2012



Source: NCSEIF Model databank

Figure19: Change in GDP, % as a result of a continuous Positive Shock to Labour Productivity in the industrial Sector



Source: Estimated by VANMIEU model

Using the model we consider the effects of a positive shock to labour productivity in the industrial sector. In the model the rate of productivity increase each year in the industrial sector is significantly increased. This reduces the cost of production resulting in a lower cost of output. In turn, this improves competitiveness and exports rise. Potential output is enhanced.

The growth in the industrial sector sees an actual increase in employment in spite of the productivity increase. Higher incomes result in higher consumption. Overall, as shown in Figure 19, GDP ends up between 1.2% and 1.5% higher as a result of the more rapid productivity growth. This shows how foreign direct investment can impact on the economy through increasing productivity.

There is some improvement in the current account of the balance of payments as exports are higher, due to the improved competitiveness driving growth. There is relatively limited impact on the government deficit.

This highlights the importance of policy measures that can enhance productivity growth in the long run. It is only through such an increase that high growth can be sustained in the medium term.

10. Policy Implications

In the light of this analysis of the factors driving growth in the Vietnam economy it is worthwhile considering the implications for policy. How can public policy best be deployed to sustain a high rate of growth in the economy over the rest of the decade?

Among the key areas of policy that need to be addressed to ensure sustained economic growth are:

- Measures to increase human capital – investment in education and how it might enhance growth.
- Measures to increase productivity. This would include improving the performance of state owned enterprises.
- The need to invest in infrastructure.
- The importance of maintaining competitiveness
- Maintaining an appropriate counter-cyclical fiscal stance and ensuring that the public finances are on a sustainable trajectory
- A monetary policy that will deliver a stable rate of inflation.

In the long run a key factor in the growth of the economy will be the increase in the share of the population that has completed second level education and also a substantial increase in the numbers completing third level education. At present the older generation of the work force has a relatively low level of educational attainment reflecting the poverty of the economy when they were growing up.

While the current cohort of school leavers is significantly better educated, there is still a need for a substantial improvement in the numbers obtaining a high level of

education. This would greatly enhance the rate of productivity growth and allow Vietnam to attract more skilled production processes, offering greater domestic value added. Attention also needs to be paid to the quality of the education.

With the growth in high tech exports there is an opportunity to up skill the work force. Research should be undertaken to establish whether there are special skills that major new enterprises need and to provide vocational education opportunities to enhance the supply of workers with these skills. This may require some regional differentiation depending on the nature of the enterprises that are expanding locally.

Broader measures to enhance productivity could include policies to reduce the burden on new enterprises setting up. It may also be useful to discuss with firms locating new business in Vietnam how best the local conditions could be improved and what would be needed to see them locate some higher value added processes in Vietnam.

Research undertaken by the NCSEIF (Khoi) and jointly with the ESRI (Morgenroth, O'Tooole and Thuy) indicates that state owned enterprises have low levels of productivity in spite of their high levels of investment. Transforming these firms, very possibly through privatisation, so that they can compete in the market economy is essential. At present they are absorbing much scarce capital and making poor use of it. A redirection of resources and a major reform of this sector could make a significant contribution to enhancing productivity growth in the economy.

Given the rapid growth of the Vietnam economy there is a major need to ramp up investment in key areas of infrastructure such as transport, water and sanitary services, housing etc. It is rather like a child growing out of its clothes – the very rapid growth needs a much more developed infrastructure if the economy is not to be choked by increasing bottlenecks. Choosing the priorities for scarce investment will not be easy. Given the limited resources available it will be very important to ensure that projects are well chosen and that they are delivered within budget.

While the importance of competitiveness is identified by the model based research, the data currently available make it very difficult to assess what is happening at the firm or even the sectoral level. Nonetheless, it remains a very important policy issue and fiscal policy needs to be used to ensure that demand pressures in the economy do not run ahead of the ability of the output sectors to deliver. Also, maintaining a stable rate of inflation through an appropriate monetary policy stance is very important. Fluctuating and high inflation rates can make it very difficult for domestic producers to compete on external markets. Even if the exchange rate eventually adjusts to offset a decline in competiveness, it can greatly enhance the uncertainty facing the business sector and, as a result, increase their costs.

11. Conclusions

The research outlined in this Chapter makes extensive use of the analysis undertaken with the Vanmieu model of the economy. However, as with all models it is far from perfect and it has a number of key gaps. Before further improvements are undertaken it will be important to develop better data jointly with the GSO to cover the income side of the national accounts, wages and prices and the public finances (separate oil revenue from the total budget revenue). Other further development of the model that would be useful include: considering the impact of SOE reform; separating out industrial manufacturing and construction; defining the impact of imports and exports in agriculture, forestry and fisheries; and assessing the impact of government investment in infrastructure and R&D. These issues will be considered in the next version of the model. Also, data on the monetary and financial sector need to be improved to allow a better understanding of the impact of monetary policy. And finally, simulating the impact of policy changes on the economy in the medium term is one of main planned improvements in the model.

The success of Vietnam in dramatically raising the standard of living of its population over the last twenty years was no accident. Policy changes, beginning in the 1990s, provided the basis for the development of a vibrant market economy with growing links to the wider world economy.

The key task for domestic policy is to build on this success. This will require major state investment in education and infrastructure to support economic and social development. In addition, policies to enhance the productivity of the economy will be of growing importance. Making the economy more efficient will help limit the resource needs. In addition fiscal and monetary policy needs to focus on the medium term needs of the economy, providing a stable and sustainable basis for further growth. If the appropriate policies are pursued the economy should be able to continue growing at a reasonably rapid pace over the rest of the decade.

Year	Number	Title/Author(s) ESRI Authors/Co-authors *Italicised*
2016	525	Attitudes to Irish as a school subject among 13-year-olds *Emer Smyth and Merike Darmody*
	524	Attitudes of the non-Catholic Population in Northern Ireland towards the Irish Language in Ireland *Merike Darmody*
	523	An auction framework to integrate dynamic transmission expansion planning and pay-as-bid wind connection auctions *Niall Farrell, Mel T. Devine* and Alireza Soroudi[†]
2015	522	Surplus Identification with Non-Linear Returns *Peter D. Lunn* and Jason J. Somerville[†]
	521	Water Quality and Recreational Angling Demand in Ireland *John Curtis*
	520	Predicting International Higher Education Students' Satisfaction with their Study in Ireland Mairead Finn and *Merike Darmody*
	519	What Factors Drive Inequalities in Carbon Tax Incidence? Decomposing Socioeconomic Inequalities in Carbon Tax Incidence in Ireland *Niall Farrell*
	518	A Menu Approach to Revealing Generator Reliability Using a Stochastic Bilevel Mathematical Program *Mel T. Devine and Muireann Á. Lynch*
	517	How Do External Costs Affect Pay-As-Bid Renewable Energy Connection Auctions? *Niall Farrell* and *Mel T. Devine*
	516	Income-Related Subsidies for Universal Health Insurance Premia: Exploring Alternatives using the SWITCH Model *Tim Callan, Brian Colgan* and *John R Walsh*
	515	Modelling Eligibility for Medical Cards and GP visit cards: Methods and Baseline results *Tim Callan, Brian Colgan*, C.Keane and *John R Walsh*