

The World Economy in Crisis – The Return of Keynesianism?

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Low agricultural productivity in a monetary economy.

Causes and macroeconomic consequences on economic development in low-income countries from a monetary Keynesian perspective

Martin Sauber*

Abstract

The workings of market forces lead either to an economic stagnation or to the erosion of the monetary system in low-income countries. Therefore a mercantilist Monetary-Keynesian development strategy is proposed, which argues for a certain macroeconomic constellation. However, under the condition of the current global financial architecture and ongoing financial crisis, it will be difficult to enforce developing countries' interests. In this critical concept as opposed to the conventional neoclassical, post-Keynesian, or structuralist theories, money is endogenous.

The role of agriculture has a prominent role in classical theory, but its macroeconomic relevance in modern economic development theory is only insufficiently taken into consideration. Monetary-Keynesian market theory can explain the dependency *and* the structure. It will be shown how market conditions, especially on the money and credit market, also lead to unequal *sectoral* development. Whilst Africa's agricultural productivity remains absolutely and relatively low, that of industrialised countries is now 68 times higher. As a consequence, African countries are confronted with a general downward trend of agricultural real prices on the world market. Therefore, the fulfilment or violation of the functional conditions of the market systems has consequences on the country level in general and on the sectoral development.

The influence of agriculture on the economic development process is complex. Eight important indirect linkages can be identified. One finding is that due to a spill-over from the agricultural to the industrial sector even a Monetary-Keynesian development strategy might be hampered or even impossible. A formal macroeconomic two-country two-sector partial model and a graphical illustration will capture key issues of the discussion.

* PhD-Candidate at University of Hamburg, Faculty of Economics and Social Sciences, Germany; martin.sauber@gmx.de; phone: 0049 40 22628502

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Introduction

Whilst income is increasing in some developing countries such as in East and South Asia, many sub-Saharan African (SSA) economies stagnate and the region remains one of the world's poorest (UNCTAD 2004). In Africa, one third of the GDP, 40% of the exports, 70% of the full time employment and 80% of the people (directly and indirectly) still depend on agriculture. Again, Africa was confronted with a crop price hike between 2006 and mid-2008, which was to some respect outstanding compared to other price increases which occurred e.g. in 1971-74 and 1994-96 (Langley et al. 2008; Fan & Headey 2008). The performance of the agricultural sector is not only crucial for the vulnerability to food crisis but also to overall social and economic development (Hazell 2002; Fulginiti et al. 2004).

When discussing theoretical economic aspects of agriculture in Africa, it is helpful to clarify first the underlying general market theories about economic development. Neoclassical growth and development theories are based on an initially given endowment of resources, which determines the income process. Given full employment in the long run, efficient international allocation of resources will lead to a Pareto optimum. Due to the low level of income in developing countries saving is low too (saving gap). Since saving is necessary to finance investment developing countries lack resources. Neoclassical balance of payments interpretation suggests that resources have to be transferred from rich to poor countries. This would allow developing countries to import capital goods financed by foreign debt.

Post-Keynesian and structuralist development theories conclusion is similar. The role of saving is central to Harrod-Domar style growth theories (Harrod 1939; Harrod 1948; Domar 1946). Structural differences are an additional argument in favour of resource transfer and are fundamental in the works of Prebisch and Singer (Prebisch 1959; Prebisch 1964; Singer 1950; Singer 1975; Nurkse 1953; Lewis 1980; Todaro 1989; Rauch & Meier 2005; Tinbergen 1965; ECLAC 2008). Neo-structuralist authors like Shaw and McKinnon introduced finance and money problems (Shaw 1973; McKinnon 1973), Thirlwall presented a model which formalised the topic (Thirlwall 1979; Thirlwall 2004; Hussain & Thirlwall 1982) and Taylor is known for his work on three-gap models (Taylor 2004; Taylor 1996; Easterly 1999; Dutt & Ros 2003). However, low level of income is still caused by low savings, which is seen as the restriction of development. Therefore, a favourable balance of payment position for a developing country shows a capital account surplus, which goes along with a current account deficit.

This paper will discuss a Monetary-Keynesian theory. Regarding money, this concept is quite different to the conventional neoclassical, post-Keynesian or structuralist theories. Within this concept is possible to identify the low quality of the currency in developing countries as a relevant common indicator for economic stagnation. Consequently, policy recommendations include aspects, which are neglected or even dismissed in others concepts. The role of agriculture has a prominent role in classical theory, but its macroeconomic relevance in modern economic development theory is only insufficiently taken into consideration. Therefore, the causes and macroeconomic consequences on economic development in low-income countries will be discussed from a monetary Keynesian perspective.

Section one of this paper deals with the general theoretical controversy about economic development. It presents a Monetary-Keynesian theory and shows how market processes lead either to an economic stagnation or to the erosion of the monetary system in developing countries. Section one closes with a mercantilist development strategy arguing for a macroeconomic constellation which is characterized by an undervaluation with simultaneous appreciation expectation. Following the Monetary-Keynesian approach, section two introduces the agricultural sector in the analysis. It presents a statistical evaluation of the asymmetric historical evolution of agriculture in OECD and sub-Saharan African countries. An explanation is offered of how the development evolved and how this change affected the long term trend of prices on the world market. An examination follows about the implication of low agricultural productivity in a monetary economy on the industrial sector and the general economic development perspectives. Finally, a formal two-country two-sector model captures key issues of the discussion. The findings are presented in a graphical illustration.

1 A heterodox theory about economic development

1.1 Monetary-Keynesian theory

Monetary-Keynesian theory focuses on the link between assets and aggregate production, employment and income. In a liberal economy, it is the company, whose accumulated investment determines the level of employment. But usually time will pass by between investment, employment, and company's turnover. Two important consequences arise from this fact. The first is that the production process contains uncertainty. The second is the requirement of credit. The role of credit under this condition confers money its dominant position in the market system. No doubt, money has a function as a medium of exchange, unit of account, and store of value. But regarding the market system, its mean of payment is

absolutely crucial (Betz & Lüken-Klaßen 1989; Heine & Herr 2000; Riese 2001a; Nitsch 1999; Collignon 2002; Greenwald & Stiglitz 2003; Stadermann 1989).

The theory must identify the functions of the asset holders, because, the conditions of advance money are determined by the asset and credit market. Doubtlessly, the central interest of an asset holder is at least to maintain the value of his asset. And in a liberal economy he will choose under the alternatives according to his preferences. Besides e.g. cash, gold and real estate, holding nominal fixed liabilities in domestic currencies is only one option. The latter leads via the banking system to credit supply. But, due to the uncertainty in the production process the value of the nominal fixed liabilities is not assured. Therefore, in order to generate credit, the asset holders have to be motivated to take on the risk by means of a pecuniary return. In the end it is the asset holder who chooses among assets that either gain a non-pecuniary return due to its security or assets with a pecuniary return. This sovereign decision determines the extent of assets, which is available for money supply, credit and finally the production process (Riese 1990; Riese 2001a; Nitsch 1999; Betz 1993).

The pecuniary return, as expressed in the interest rate, has to be generated as profit in the production process. In order to obtain credit, the company must earn at least enough to pay for capital goods and interest. Therefore, the genesis of profit and interest is not based on physical capital which is productive, but on the limited money supply. Interest is not an income of a resource, but solely based on private property on the credit and asset market (Riese 2001b; Schelkle 1995).

Positive interest is an indicator for the scarcity of money. This does not have only consequences for the price level (like in the neoclassical theory) but also on the scale of investment, production, employment and therefore income. In the Monetary-Keynesian theory scarce money limits the employment of (real) resources and is therefore the budget-restriction of the market system. Companies must set prices that enable them to pay the nominal wages and interest (mark-up pricing). Full employment of resources would lead to a maximum of scarcity. This would increase prices of real resources and the generation of the required profit would be impeded. Full employment therefore does not fulfil the requirements of the credit and asset market. It could either not be achieved or would be a market disequilibrium. A Monetary-Keynesian equilibrium, in the short and long run, implies a limited employment of resources (Fritsche 2004; Haslinger 1982; Clower 1963; Park 2004).

1.2 Economic stagnation and erosion of the monetary system

Economic development means a country moves from an equilibrium with a low level of employment to an equilibrium with a higher level of employment and higher income. Over time, a country must shift its budget-restriction. This requires the establishment of an asset market which fulfils the requirement of the market system. This is given, when asset holders accept the national currency for long term creditor-debitor contracts. A valid condition therefore is a stable price level and exchange rate. In order to constitute money, an inflationary expansive monetary or fiscal policy is not appropriate, because it is in conflict with the decision calculus of the asset holders. In order to influence the preferences on the asset market, all policy measures have to target the quality of the national currency (Betz & Lüken-Klaßen 1989; Fritsche 2004; Schelkle 1992).

In the next step, a theory has to consider the inherent problems of an open economy. The discussion will show that if a developing country aims to establish a national currency, it can not rely on the market process. For the asset holder arises a further choice of action from the possibility to buy foreign currencies. His decision to buy foreign currency is determined by the pecuniary rate of return (interest rate difference) and the non-pecuniary rate of return (inflation rate and nominal exchange rate). The high non-pecuniary rate of return of the long established currencies of industrialised countries leads to a weak position in the competition of currencies for developing countries. This leads to systematic excess demand for foreign currencies, respectively to an excess supply of domestic currencies (Lüken-Klaßen 1993; Schelkle 1995).

In the economic literature three theoretical solutions are found to the problem of excess demand for foreign currencies. However, as it will be shown, all will lead to stagnation or erosion of the domestic monetary system.

(1) A country could try to increase the supply of foreign currencies: This conclusion results from gap models. The foreign exchange gap has to be closed by a resource transfer from industrialised to developing countries. (a) However, accumulation of foreign debt indicates debt services, interest payments, and therefore an increase in foreign exchange demand in the future, which results in inflation and depreciation expectation.¹ (b) Furthermore foreign credit usually enhances the inflation, because it could increase aggregate demand. This results in

¹ Additionally, the developing country usually bears the risk of exchange rate changes. The devaluation raises the value of the debt in terms of national currency and increases the demand of foreign exchange.

reduction of the incentive to hold assets nominated in domestic currency (Betz & Lüken-Klaßen 1989; Hauskrecht 2000).

(2) A country could try to increase the demand of national nominal assets. An increase of the national interest rate would reduce the demand of foreign exchange. The idea is, that higher interest rate increases the pecuniary rate of return and motivates asset holder to buy domestic currency, (a) but commonly only short term credits denominated in foreign currency are offered and lead to an increase of foreign debt. (b) The main problem is to the stagnatory effect of high interest rate. From the perspective of creditor, high interest increases the risk of default and from the angle of the investor, it reduces the amount of profitable projects. The amount of creditor-debtor contracts will shrink and dampen investment, production and employment. When stability results, it is only on the expense of development (Schelkle 1992; Lüken-Klaßen 1993).

(3) A country could try to increase foreign demand of the domestic currency: It would require a higher real exchange rate (price notation) in order to foster exports. Theoretically, it can be implemented in two ways. (a) By the means of an interest rate reduction a country can target its nominal exchange rate and induce a depreciation. If the results are import price and nominal wages increases (wage price spiral), real appreciation reduces international competitiveness. On the asset market, inflation pressure and nominal depreciation makes tangible assets and foreign currency more attractive (depreciation capital flight spiral). Additionally, higher demand for tangible assets corresponds to an increase in demand on the commodity market, which might have an inflationary effect. (b) Alternatively, a reduction of the relative price level would also support exports. On the other hand, the implementation requires usually a contraction of production via a restrictive monetary policy, which is in contradiction to the development goal (stop and go policy). After all, the last option might generate a short term reduction in foreign exchange, but the instability of the price level and foreign exchange reduces the acceptance of the domestic currency (Riese 1989; Riese 2001a; Betz & Lüken-Klaßen 1989).

The discussed measures lead either to stagnation or unstable domestic asset prices, which result in an erosion of the monetary system. Furthermore, the accumulation of debt in foreign exchange leads to a real overvaluation which results in a capital account surplus and a current account deficit.

A much broader discussion could analyse economic systems, with a function not being based on national money or any money at all. The first regards to the phenomena of dollarization. On the one hand, dollarization helps countries to control inflation, but on the other hand, the

disadvantages for economic development are high. Due to the lack of nominal adjustments, countries are faced with real appreciations. Since dollarization goes along with central bank's abdication of its lender of last resort, the probability of banking crises increases. Furthermore, real interest rate differences rise in comparison to industrial countries. Therefore, dollarization is not suitable as a development strategy, but is the articulation of a weak currency (Roy 2000; Herr & Prieue 2005; Hauskrecht 1998). For instance, small scale subsistence farming and planned economies are economic systems whose functions are in principle not based on money. In these economies, the societies's fortune is not available for the production process, which limits productivity and income. If the state seeks to circumvent this problem with an intense control of the asset market, it would abandon the fundamental principles of a liberal economy (Schelkle 1992; Nitsch 1999).

The low position of developing countries in the hierarchy of currency constitutes a dependency based on functional conditions of the market system. Under these conditions the *market process* is a sufficient universal explanation for stagnation.² Market and policy failure may describe additional phenomena (Schelkle 1995; Betz & Lüken-Klaßen 1989).

1.3 Mercantilist development strategy

The necessary fulfilment of the functional conditions of the market system challenges development strategies.³ The Monetary-Keynesian theory therefore focuses on a market oriented macroeconomic constellation. In order to initiate development, a country has to avoid the overvaluation of its currency. On the other hand, a mercantilist undervaluation with simultaneous appreciation expectation induces demand driven growth.⁴ Under this constellation, the developing country achieves export surpluses and resulting expansion of production, employment and income. Increase in income allows further saving and due to the

² It was shown, how international differences in the income level are caused by the market process. Furthermore, this outcome is an equilibrium market outcome. The differences in real wages on the labour market and the difference in the interest rates are an effect of the preferences on the asset and credit market and will not lead to an adjustment process (Lüken-Klaßen 1993).

Moreover, the market outcome is not consistent with neoclassical efficiency. Due to the real wage differences relative market prices do not equalise. However, relative price equalisation is the condition for optimal allocation. Furthermore, if the neoclassical efficiency criteria are not fulfilled, neoclassical policy recommendation is invalid.

³ It is generally acknowledged that growth alone does not make a country successful. For example, growth is not a sufficient condition for poverty reduction. However as Herr and Prieue state: "there is widespread consensus that growth of GDP is the most important single determinant of poverty reduction" (Herr & Prieue 2005, p.11) and "Industrialisation and export-led growth based on manufactured goods [...] is the main driver of growth in most of the successful development episodes" (Herr & Prieue 2005, p.41).

⁴ In this respect Monetary-Keynesian theory does not rely on adaptive expectation, but is, like neoclassical theory, consistent with the rational expectation approach (Lucas 1972; Muth 1961; Betz 2001; Heine & Herr 2000; Sargent 2008; Frydman 1982; Goldberg & Frydman 1996).

simultaneous appreciation expectation more nominal fixed liabilities in domestic currencies (change in the liquidity preference). At the same time, profit expectations stabilise and raise credit demand. Ideally, the central bank supports the undervaluation by the mean of neutralization and sterilization.⁵ Finally, the debt position of the country improves and the demand for foreign exchange decreases. The improved condition on the foreign exchange market allows the financing of capital goods imports. This Monetary-Keynesian macroeconomic constellation makes the budget restriction less confining, shifts the equilibrium outwards, creates room for real wage increases and therefore induces a development process (Flassbeck 2005; Betz 2001; Nitsch & Nicolas 2005).

The positive economic effects of an undervaluation are generally valid for any country. Therefore also industrialised countries may seek to implement a mercantilist policy. This is especially evident in a multi-currency system. If so, these countries accumulate foreign exchange reserve and execute that way strategic capital export. However, the world current accounts balance has to be zero. Thus, industrialised countries policy makes it additionally difficult for developing countries to avoid a net capital import and an overvalued currency. Especially, because developing countries are systematically faced with excess demand of foreign currencies. The debt policy of international organisations like the International Monetary Fund contributes its share. Finally, international rules of the World Bank and the World Trade Organisation prohibit protectionist measurements. While these limits the policy options of developing countries, industrialised countries mercantilist policy is in accordance with free trade (Betz & Lüken-Klaßen 1989; Riese 1989). Therefore, under the condition of the current global financial architecture and ongoing financial crisis, it will be difficult to enforce Africa's interests.

⁵ Obviously, the central bank cannot support the capital accumulation process directly with an expansive monetary policy. In order to guarantee the scarcity of money it must generate a positive real interest rate. Only after national money is constituted and an undervaluation with appreciation expectation is implemented, central bank's contribution to the development process shows an effect. This is because in that case, the central bank has changed asset holders' preferences and increased the quality of the national currency. This allows a lower interest rate and supports investment, capital accumulation and development (Schelkle 1992; Fritsche 2004; Betz 2001).

2 A Monetary-Keynesian development strategy under constraint of low agricultural productivity

2.1 Sectoral development and its consequences on the world market

It has been shown that a Monetary-Keynesian theory can explain economic development and stagnation. The following section elaborates on the integration of structure in the theoretical framework (see Figure 1). However, unlike in the Post-Keynesian and structuralist development theories, the economic structure is not seen as being causal for the economic stagnation. In addition, the dependency *and* the structure can be explained with the Monetary-Keynesian market theory. Here, the genesis of “*Structure*” is indicated with an arrow from the “*Functional conditions of the market systems*”. The arrow from “*Structure*” to “*Dependency*” is discussed later (section 2.2) in the context of how structural conditions influence the implementation of a Monetary-Keynesian development strategy.

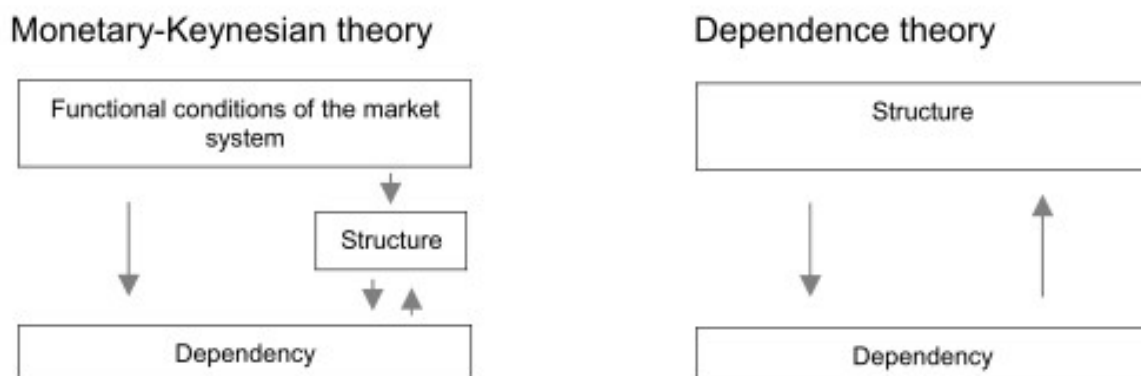


Figure 1: Monetary-Keynesian theory vs. Dependence theory
Source: Authors' construction

The unequal development of agriculture in developed and developing countries, especially since the 1950s, has resulted in a massive international productivity gap. Firstly, Figure 2 illustrates the development of land productivity in terms of cereal yield in kg per hectare from 1961 to 2004 for a group of 35 low income sub-Saharan African countries and 21 high income OECD countries.⁶ The average cereal yield in 1961 in the OECD countries compared to sub-Saharan African (SSA) countries was about 3 times higher. Over time, yield in the

⁶ Note: 35 low-income sub-Saharan African countries: Angola, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Dem. Rep. Congo, Rep. Congo, Ivory Coast, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe. 21 high-income OECD countries: Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Rep. Korea, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

OECD increased up to 5,422 kg and in the SSA up to 1,144 kg in 2004. The gap widened and the OECD extended its leading position in cereal yield over the SSA and is now almost 5 times more productive (Sauber 2007).

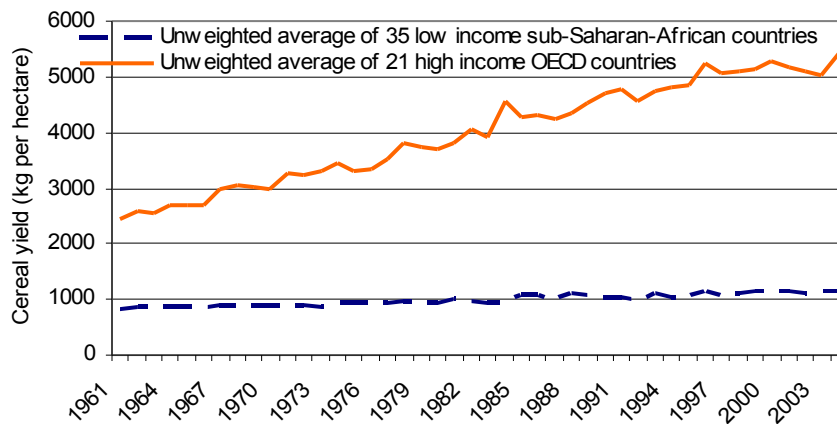


Figure 2: Development of cereal yield of 35 low-income sub-Saharan African countries and 21 high-income OECD countries (kg per hectare, unweighted average, 1961-2004)¹
 Source: Graph data calculated from the World Development Indicators 2005 (Sauber 2007, p. 19)

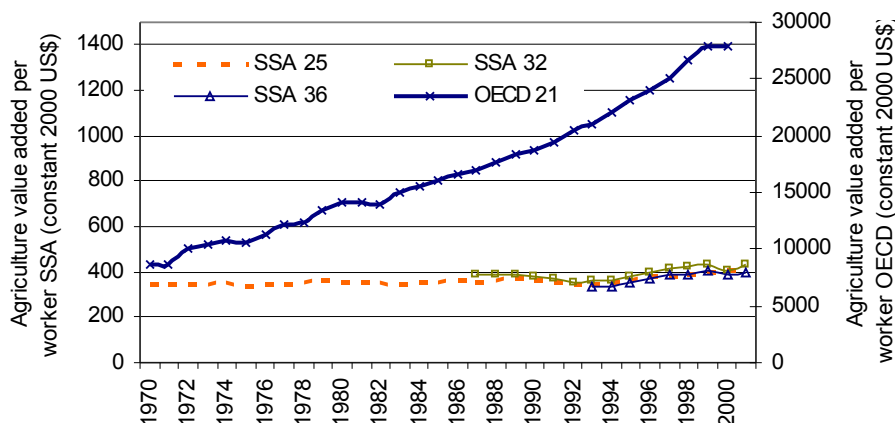


Figure 3: Agriculture value added per worker of 21 high-income OECD countries (1970-2001) and 25, 32, 36 low-income sub-Saharan African countries (1971-2001, constant 2000 US\$, unweighted average)
 Source: Graph data calculated from the World Development Indicators 2005 (Sauber 2007, p. 20)

Figure 3 compares the development of value added per worker, which indicates labour productivity, in SSA and OECD agriculture for the period 1970/71 and 2001.⁷ Agriculture

⁷ Note: 21 high income OECD countries: Austria, Belgium, Australia, Canada, Denmark, Finland, France, Germany, Greece, Iceland (not available (n. a.) for 1971, 1972), Italy, Japan, Netherlands, New Zealand (n.a. 1971-976), Norway, Portugal, Rep. Korea, Spain, Sweden, United Kingdom, United States (n.a. 2002). 25 low income sub-Saharan African countries: Rep. Congo, Dem. Rep. Congo, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Cote d'Ivoire, Guinea-Bissau, Kenya, Lesotho, Ghana, Madagascar, Malawi, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, The Gambia, Togo, Zambia. 32 low income sub-Saharan African countries: + Angola, Comoros, Equatorial Guinea, Guinea, Liberia (n. a. 2000, 2001), Sao Tome and Principe, Uganda. 36 low income sub-Saharan African countries: + Ethiopia, Eritrea,

value added per worker in SSA increased from 346 US\$ in 1971 to 410 US\$ in 2001 (primary y-axis) in contrast to the OECD with 8,668 US\$ in 1971 and 27,887 US\$ in 2001 (secondary y-axis). Whilst the OECD was 25 times more productive in 1971, it increased its advance even further with the result that its labour productivity is now 68 times higher (Sauber 2007).⁸ The immense difference in land and labour productivity amongst developed and developing countries is collated in Figure 4. It shows cereal yield (kg per hectare) on the y-axis and agriculture value added per worker (constant 1995 US\$) on the x-axis for all high-income OECD and low-income SSA countries where both data sets are available for 2001. The most significant feature is the separation of the low-income SSA countries with simultaneous low land and labour productivity (Sauber 2007).

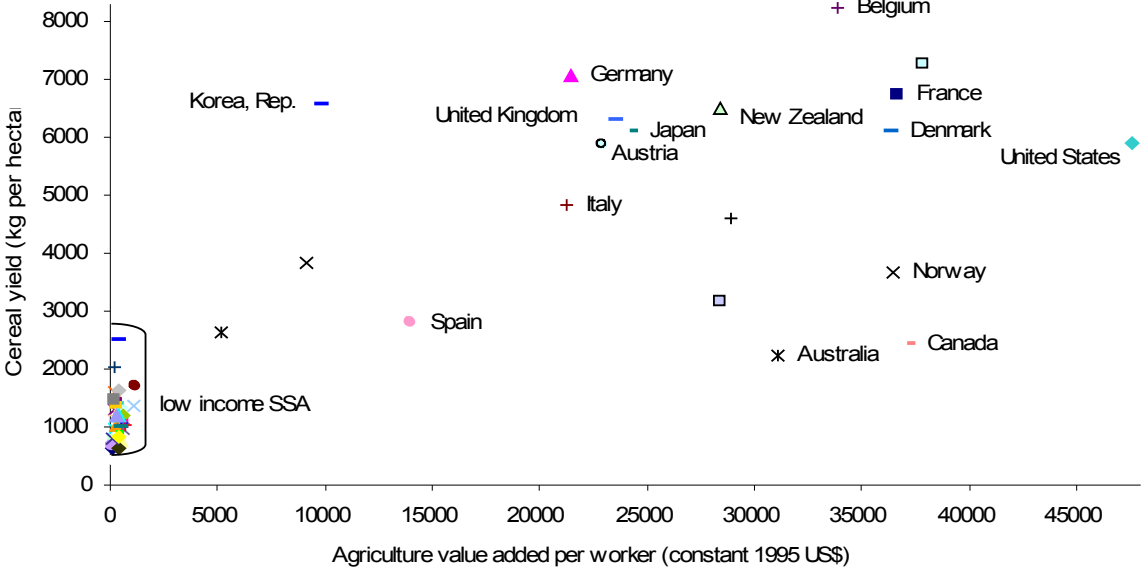


Figure 4: Cereal yield (kg per hectare) and agriculture value added per worker (constant 1995 US\$) of all high-income OECD and low-income SSA countries* in 2001;

Note: * where data is available

Source: Based on data from the World Development Indicators 2005 (Sauber 2007, p. 21)

The current situation on the world market is not only marked by international divergence, but also by a persisting uneven sectoral development, especially in high-income countries. This is probably one of the most remarkable features of the change in agriculture. Between 1850 and 1950 productivity growth rate in manufacture exceeds that of agriculture. This relation was completely reversed in the post-war period. In developed countries, productivity growth rate in agriculture exceeds those in the industrial sector for decades (Bairoch 1997; D. G. Johnson 1991; Sauber 2007).

Mozambique, Tanzania.

⁸In order to compare the unequal agricultural developments in Figure 3, two different scales, one for SSA and one for OECD, are required. The OECD scale on the secondary axis is 20 times that of SSA.

The agriculture in Western Europe and North America in the early 19th century was similar to that of most developing countries today (D. G. Johnson 1991), but changed fundamentally in the second half of the 20th century.⁹ The technological catch-up modernization process in agriculture was feasible due to favourable monetary conditions. On the one hand, a generally successful monetary economy was already established. And on the other hand, agricultural policy stabilised profit expectation and decreased risk, so that creditor-debtor contracts in agriculture could expand (Pelkmans 2006; Lüken-Klaßen 1993). These favourable circumstances allowed technological spill-overs from the whole economy, specific agricultural research and development, and investment. Over time, experience and economies of scale and scope have also improved the agricultural technology which then changed the factor ratios and improved the ways of production. In addition, the decline of cost of capital relative to labour enforced the increase in capital intensity (Wood & Mayer 1998; Mundlak et al. 1997). Capital intensive mechanical technology with flexible and mobile machinery improved labour productivity whilst land productivity was mostly enhanced due to the adoption of biological technology e.g. new crop varieties, plant nutrition and protection (Ruttan 2002). By means of this labour and land substituting technology, it was possible to increase output, yield, and productivity whilst at the same time reducing not only the relative but also the *absolute* number of agricultural labour forces (Brown & Goldin 1992).¹⁰ Farming in high-income countries turned into a sophisticated, dynamic industry that relies on new and more effective machinery, such as tractors, electric motors, hydraulic devices, air conditioning, and computers etc. and other green technology, such as fertilisers, pesticides, herbicides, vitamins, antibiotics, synthetic proteins, and new seeds etc. Modern farming further requires human capital, such as qualified management and comprehensive knowledge of the market (D. G. Johnson 1991; Bairoch 1997). As a result, in developed countries, the

⁹ Differences in sectoral development have been recognised, but it has been commonly assumed that productivity growth in agriculture cannot keep pace with productivity growth in manufacturing. According to Devashish and Will (Devashish & Will 1999), one of Smith's major contributions to economic theory was the analysis of division of labour. Smith assumed that division of labour in agriculture is more problematic than in manufacturing and therefore productivity growth in agriculture will be lower. Ricardo's simple model assumes zero technology changes although he did not deny agricultural progress, but it was clear to him that manufacturing was definitively superior. Marx also did not believe in the rural sector as a contributor to growth. Dual economy models like that of W. A. Lewis usually define the manufacturing sector as modern vs. agricultural as traditional. Finally, Prebisch's doctrine is also built upon relatively low productivity growth in the production of primary commodities. The point is that this traditional assumption of stagnating agricultural productivity is still widely accepted despite having lost its empirical foundations (Devashish & Will 1999; Sauber 2007).

¹⁰ Economic structural change in industrialised countries is well recognised and is often referred to as an increasing share of services in GDP and labour force at the expense of the industrial and agricultural sector (Cleaver & Donovan 1995). This analysis is certainly true, but it does not indicate declining agricultural output or worsening performance of the agricultural sector compared to manufacturing, services, or international competitors. On the contrary, the relative diminishing share of agriculture is in accordance with increasing output and rising efficiency, and indicates the potential of a declining share of labour force to provide agricultural commodities for the whole society (Sauber 2007).

agricultural productivity growth rate exceeded that of nominal wages, so that not only comparative advantage, but also competitiveness improved (Sauber 2004; Sauber 2007).

In contrast, in developing countries, especially in those of Africa, the stagnation in agricultural productivity diminished their competitiveness. Monetary conditions were especially unfavourable and inhibited the agricultural progress. Under the overall unfavourable economic condition, the agricultural sector's situation is aggravated.¹¹ This is because fluctuating supply and turnover result in unstable profit expectation, which makes debt services and interest payments uncertain. Land is due to its relatively stable value a popular tangible asset and therefore in the context of agricultural production overpriced. Finally, policy in developing countries often discriminates agricultural production (Sauber 2004; Sauber 2007; Wharton 1971; Cook et al. 2008; Ogbe 1991; Ndikumana 2006; Timmer & Dawe 2007). To put it in a nutshell, high interest rate and uncertainty allow only marginal investment and technological input and lead to a low level of productivity and income in agriculture. The export performance and its traditional surplus in agricultural trade of SSA have been deteriorating since the late 1970s. Since then, food dependency has increased and now Africa has to import 25% of its food (Cleaver & Donovan 1995; Bello 2008). The LDC's (Least Developed Countries) declining share of an already-declining share of agricultural world trade is a significant indicator of the poor performance of the LDC's agricultural sector (Bruinsma 2003). This development of foreign trade has contributed to the worsening balance of payment and increased social and economic problems (Branchi et al. 1999). Where structural adjustment programs have reduced policy space and forced the departure of the state, it even crowded-out private investment in agriculture (Morgan & Solarz 1994; Bello 2008).

An economic consequence of the productivity change and of the shift in comparative advantage is the general downward trend of agricultural real prices on the world market (FAO 2001; European Commission 2005). The long-term decrease is mainly driven by the increase in productivity (European Commission 2003; ILO 2005) and enforced on the market, which is characterised by increasing supply and relative decreasing demand, which goes along with low elasticities (European Commission 2004; Harrop 2000).¹² Countries and producers that increase their productivity sufficiently can cope with lower prices and maintain their income. In addition, these countries can gain from lower food prices and higher real wages (European Commission 2003). Producers that persist in their previous way of production face negative

¹¹ Timmer and Dawe characterise agriculture as an "uncertain biophysical environment" (Timmer & Dawe 2007, p.7).

¹² Before the current food crisis occurred, real food prices of staple foods were at a 30 year low. Increased prices (in May 2008) did not exceed prices in the end of the 1970s and in the beginning of the 1980s (Fan & Headey 2008).

consequences such as a reduction in farm income, agricultural wages and level of employment. This is especially the case with the SSA countries, the Caribbean and Central America (European Commission 2004).

Under the condition of the productivity gap, the occurrences of food price hikes on the world market, like that of 2006 to 2008, are more likely.¹³ In addition, if food price surges arise, it is the bad performance of the agricultural sector in low-income countries which makes it harmful for the poor. The poor suffer directly from higher costs of living and indirectly when macroeconomic conditions worsen.¹⁴ Thereby, a price increase becomes a crisis.

Therefore, the fulfilment or violation of the functional conditions of the market systems has consequences on the country level in general, on the sectoral development, on the comparative advantage, and on the agricultural world market, which is characterised by falling agricultural prices (relative or real) and recurrent food price hikes.¹⁵

2.2 Agricultural performance and its consequences for economic development

The previous description of uneven international and sectoral developments has consequences on the situation on the world market and additionally on other sectors and the longer run development process as a whole. Eight important indirect linkages can be identified.¹⁶

¹³ For an analysis of the potential causes of the recent food crisis see IMF (IMF 2008) or Fan and Headey (Fan & Headey 2008) who discuss e.g. biofuels demand, decline of stocks, depreciation of the USD, financial market speculation, growth in demand from China and India, hoarding (export restrictions), low interest rates, productivity slowdown, rising oil prices and weather shocks. Disagreement exists regarding the question, to what extent change in agricultural productivity growth contributed to the price increase. While Abbott et al. (Abbott et al. 2008) identify declining productivity growth rates (yield) in the cereal grain production as a cause for the price crisis, Fuglie considers total factor productivity data for the whole agricultural sector from 1961 to 2006, which do not indicate declining productivity growth. However, Fuglie found evidence for falling growth rates in investment and regional diversity (e.g. well below averages in Sub-Saharan Africa) (Fuglie 2008).

¹⁴ Ivanic and Martin calculate the short-run effect of the food price increase between 2005 and 2007 on households' welfare considering change in income (including wage increase of unskilled worker) and cost of living (Ivanic & Martin 2008). Wodon and Zaman estimate the potential impact in sub-Saharan African countries (Wodon & Zaman 2008).

¹⁵ As opposed to that, Jean-Pierre Chauffour (World Bank) argues, that governmental intervention in agricultural markets have caused inefficient agricultural production which "resulted in thinner global agricultural markets than otherwise would be the case, more volatility, and lower overall reserve supply capacity and food security" (Chauffour 2008, p.1). The Article of Chauffour does not explicitly reveal its applied economic theory. However, it can be assumed, that the author relied in his analysis on neoclassical theory. Therefore, it is likely, that the conclusion is deduced on the concept of static efficiency. In contrast to static efficiency the concept of dynamic efficiency could also capture dynamic changes like productivity increases and real wage improvements (McCartney 2004). In the context of the discussed topic it becomes obvious, that the notion of static efficiency is not helpful. On the one hand, in low-income countries e.g. economic development and growth is defined as the normative goal. On the other hand, in industrialised countries, productivity has grown year after year, so that in relation to that the criticised static inefficiency should be several fold overcompensated.

¹⁶ A empirical study from Ataman Aksoy and Francis Ng found out that "Low-income countries [...] have seen their small surplus in food trade turn into a deficit, which is only 0.2% of their imports and 0.05% of their GDP" (Aksoy & Ng 2008, p.446). The authors conclude that "While there is a deterioration in the food and agricultural trade deficits of low-income countries, the change is very small and there are very few countries that appear to be really vulnerable" (Aksoy & Ng 2008, p.450). Whether these results are applicable for the problems discussed

(1) Firstly, agriculture absorbs products from other sectors. A dynamic agricultural sector demands intermediate inputs as well as consumption goods and therefore supports the development of the domestic market. From the demand side, agriculture might improve industrial turnover, investment and finally capital accumulation (Schelkle 1992; Elsenhans 2001; Matsuyama 1992; Johnston & Mellor 1961; Rostow 1960; Lewis 1953; Ogbé 1991; Taylor 1993).

(2) Also the industrial sector demands products from agriculture. Commodities produced by farmers are intermediate inputs used by the industry. If these products are expensive, the value added chain might be affected and growth limited (Rostow 1960; Schelkle 1992; Diao et al. 2008).

(3) A further aspect regards price stability. A backward agriculture is extremely sensitive to environmental influences, the production is inflexible, and the output as well as the supply adjustment is low. This makes agriculture vulnerable for crises and shocks.¹⁷ Scarcity will lead unavoidably to price increases of agricultural commodities, because the substitution of products is rarely possible (Fan & Headey 2008). Given a large share of agriculture in gross domestic product, a strong impact on the overall price level can be expected (IMF 2008). Effects on the general price level reduce the quality of the currency which disrupts the development process. The possibility of second round effects might trigger restrictive monetary policies (e.g. high interest rates) with stagnant consequences on the economy (S. Johnson 2007; Drummond & Wakeman-Lynn 2008; IMF 2008). Furthermore, price increases often provoke political instability which may have further macroeconomic effects. Moreover, changes in food prices usually alter the overall consumption pattern and spill over to others products, so that other sectors faces price and quantities changes (Timmer & Dawe 2007). Additionally, in a period of very low prices, producers might demand credit in order to overcome cash flow shortages. Price stabilization decreases therefore this kind of credit demand and improves the situation on the credit market (Timmer & Dawe 2007). Agricultural advancement stabilises the price development and supports the fulfilment of the functional condition of a monetary market economy (Schelkle 1992).¹⁸

in this paper is questionable. One has to examine carefully the relevance of e.g. the disaggregating of countries, in the period 2000/2001 to 2004/2005, the definition of food (exclusion of cash crops, feeds, processed food and seafood) and the GDP as a benchmark.

¹⁷ Wodon and Hassan mention the case that households might be forced to disinvest when they have to sell or consume livestock and seed grain (Wodon & Zaman 2008).

¹⁸ Timmer and Dawe assert, that “[...] the role of stable food prices in food security has been largely ignored by the development profession.” (Timmer & Dawe 2007, p.2). The authors conclude, that “Several Asian countries have stabilized domestic rice prices [...]. The stabilization scheme and economic growth worked in tandem to achieve food security as quickly as possible.” (Timmer & Dawe 2007, p.4).

(4) An important linkage exists via the labour market. In developing countries a large proportion of the wages is spent on agricultural products and especially on staple food.¹⁹ Low productivity in agriculture leads to relatively high food prices and might hinder the economic dynamic from the supply side. Especially, if real wages are not downward flexible, high food prices influence nominal wages and labour costs. If wage pressure cannot be compensated by higher productivity or prices in the industrial sector, a company's profitability will suffer. In the end, investment and production will be cut down. At best, productivity progress in agriculture has the potential to reduce pressure on nominal wages, to improve profitability, to extend creditor-debtor contract volumina, and to accelerate capital accumulation (Nurkse 1953; Ogbé 1991; Schelkle 1992; Johnston & Mellor 1961). Productivity increase also opens an important policy option. Usually, it is difficult to influence wage levels directly. Via agricultural productivity and food prices it might be indirectly possible.

(5) A dependency on agricultural imports can have several negative effects on the development process. Agricultural imports require foreign exchange, so that a dependency on it intensifies the problems described above. Furthermore, fluctuations and shocks from the world market are transmitted to the current account and domestic market.²⁰ It increases uncertainty and destabilises the domestic economy. Finally, as a result, political dependency can evolve and limit the political options for actions (Rostow 1960; Diao et al. 2008; Morgan & Solarz 1994).

(6) The performance of the agricultural sector might limit a mercantilist development strategy. As discussed above, a Monetary-Keynesian constellation demands an undervaluation with simultaneous appreciation expectation. Implementing this strategy will initially increase international real wage differences and reduce the real wages in developing countries measured in foreign currency.²¹ Costs of living will only remain constant, if wage goods are produced domestically. Otherwise, rising agricultural import prices lead to shrinking real wages. If a decrease of real wages is not possible (e.g. due to a minimum consumption) nominal wages might increase. As a result, either accumulation stagnates or the intended undervaluation is impeded by a real appreciation. Therefore, an agricultural progress would

¹⁹ Low-income countries spend 50% of their income on food while in high-income countries it is only 10%. The spending on staple food (e.g. corn, wheat, rice, vegetable oils) as percent of total food spending in low-income countries is 70% and in high-income countries it is only 20%. Price fluctuations of staple food are especially high and therefore particularly affect developing countries (Trostle 2008a). Dessus et al. computed scenarios of real income effects resulting from food prices changes based on different stylized facts and possible parameters (Dessus et al. 2008).

²⁰ In the context of the food crises 2005-2008 Dewbre et al. refers to the food price increase in developing countries which exceeded on the one hand that of the aggregate price rise and on the other hand that in developed countries. Additionally, several theoretical linkages are discussed (Dewbre et al. 2008).

²¹ The African Financial Community Franc devalued by 50% in January 1994. In a qualitative study Fouéré et al. investigated the devaluation effect on urban households in Congo and Sengal. The result of the study shows, how urban households behaviour and living conditions changed due to higher food import prices, rising expenditure on family meals and therefore falling purchasing power (Fouere et al. 2000).

stabilise nominal wages, would allow falling international real wages and would support the establishment and maintenance of a mercantilist undervaluation (Elsenhans 2001; Schelkle 1992; Betz & Lüken-Klaßen 1989).

(7) Another linkage is the social acceptance of a Monetary-Keynesian development strategy. The implementation of the described macroeconomic constellation prohibits short term effects of a populist budget deficit or expansionary monetary policy.²² Agriculture employs a large fraction of the population and delivers food to the marginalised in the city, which are regularly mobilized for political purposes (Drummond & Wakeman-Lynn 2008; S. Johnson 2007; Anderson 2006). A successful agricultural policy might increase the social and political stability. It may help legitimizing a Monetary-Keynesian development strategy.²³

(8) Finally, developing countries are in competition not only with industrialised countries, but they compete also among themselves. In order to establish a macroeconomic constellation as described above, the economic relations of competing developing regions, like Asia-Africa, are relevant. The described aspects from (1) to (7) suggest that e.g. India had an advantage compared to many African countries (Diao et al. 2008; Timmer & Dawe 2007). Its agricultural revolution supported the economic development. Implementing a mercantilist strategy in a multi currency system does not leave any leeway.

As we have seen, that the stagnation of the industrial sector and of the economy as a whole is directly caused by the low quality of its currency. Additionally, economic development is indirectly affected by monetary problems via the agricultural sector.

2.3 Modelling a Monetary-Keynesian development strategy

In order to formalise some important aspects described above, a macroeconomic partial two-country two-sector model will be presented. It comprises a developing (1) and a developed (2) country, each with an industrial (*IS*) and agricultural sector (*AS*). Productivity in the developed country exceeds that of the developed country, while the difference in agriculture is higher. The prices in national currency of the domestically produced industrial (P^{IS}) and agricultural products (P^{AS}) are determined by unit labour costs (w/λ ; productivity λ and wage w) and profit q .²⁴

²² Fan, Headey, 2008, refers to the World Bank (World Bank 2008), which counted 84 countries who reacted to the food surge with low net taxation of food. Regarding the IMF (IMF 2008), food and fuel price increase related tax and subsidy measurements might increase the budget deficit (as % of GDP) by one percentage point or more (Fan & Headey 2008).

²³ The food price hike between 2006 and mid-2008 triggered peaceful demonstrations e.g. in Indonesia, Malaysia, Pakistan, Peru and South Africa. In the following countries the protest was less peaceful: Bangladesh, Cameroon, Egypt, Ethiopia, Burkina Faso, Guinea, Haiti, Indonesia, Ivory Coast, Mauritania, Mexico, Morocco, Mozambique, Niger, Philippines, Senegal, Thailand, Uzbekistan and Yemen (Trostle 2008b).

²⁴ In contrast to the Balassa model (Balassa 1964), productivity and wages are sector specific.

$$P^{AS,1} = \frac{w^{AS,1}}{\lambda^{AS,1}} (1 + q^{AS,1}) \quad (\text{Equation 1})$$

$$P^{IS,1} = \frac{w^{IS,1}}{\lambda^{IS,1}} (1 + q^{IS,1}) \quad (\text{Equation 2})$$

In consequence aggregate wage, productivity and price level are:

$$w = \alpha w^{IS,1} + (1 - \alpha) w^{AS,1} \quad (\text{Equation 3})$$

$$\lambda = \alpha \lambda^{IS,1} + (1 - \alpha) \lambda^{AS,1} \quad (\text{Equation 4})$$

$$P^1 = \alpha \left[\frac{w^{AS,1}}{\lambda^{AS,1}} (1 + q^{AS,1}) \right] + (1 - \alpha) \left[\frac{w^{IS,1}}{\lambda^{IS,1}} (1 + q^{IS,1}) \right] \quad (\text{Equation 5})$$

It is assumed, that nominal wages in a developing country's industry are influenced by agricultural prices. This affects industrial unit labour costs and prices. If agricultural products are produced locally, their prices are determined by productivity, in the case of agricultural imports the nominal exchange rate has to be recognized.

In the case of agricultural autonomy, the industrial price in the developing country ($P^{IS,1}$) is:

$$P^{IS,1} = \frac{w^{IS,1} \left(\beta P^{AS,1} \right)}{\lambda^{IS,1}} (1 + q^{IS,1}) \Rightarrow \quad (\text{Equation 6})$$

$$P^{IS,1} = \frac{w^{IS,1} \left[\beta \frac{w^{AS,1}}{\lambda^{AS,1}} (1 + q^{AS,1}) \right]}{\lambda^{IS,1}} (1 + q^{IS,1}) \quad (\text{Equation 7})$$

In the case of agricultural imports, $P^{IS,1}$ is:

$$P^{IS,1} = \frac{w^{IS,1} \left[\beta \left(P^{AS,2} \right) e \right]}{\lambda^{IS,1}} (1 + q^{IS,1}) \Rightarrow \quad (\text{Equation 8})$$

$$P^{IS,1} = \frac{w^{IS,1} \left[\beta \left(\frac{w^{AS,2}}{\lambda^{AS,2}} (1 + q^{AS,2}) \right) e \right]}{\lambda^{IS,1}} (1 + q^{IS,1}) \quad (\text{Equation 9})$$

The price competitiveness for industrial goods is therefore determined by unit labour costs and the nominal exchange rate. The price competitiveness for industrial goods in the developing country can be expressed as:

$$P^{IS,1} \leq P^{IS,2} e \quad (\text{Equation 10})$$

The important role of the nominal exchange rate is obvious. It links country specific nominal unit labour costs. A nominal depreciation leaves nominal wages constant. Only real wages and purchasing power change, compared in international currency. Based on given nominal wages, companies set the mark-up independently, which determines the price level and real wages. An adequate integration in the international price arrangement is given by the nominal exchange rate.

However, the introduced spill over from agriculture changes the effect of price setting. This is because now nominal exchange rate movement does not only change industrial prices but also via agricultural imports the nominal wages in the industrial sector. The national real wages are not any longer a residuum, but are dependent on import prices. As a result, the former exogenous parameter “nominal wages” in the industrial sectors becomes an endogenous variable. The agricultural performance in developing countries determines nominal wages to be an endogenous or exogenous variable and limits the scope of international real wage adjustment via nominal exchange rate adjustments.

If c.p the agricultural productivity growth rate in the developed country exceeds nominal wage increase ($\Delta\lambda^{AS,2} > \Delta w^{AS,2}$) and simultaneously productivity stagnates in the developing country ($\Delta\lambda^{AS,2} > \Delta\lambda^{AS,1}$) unit labour costs and prices will fall ($\Delta P^{AS,2} < \Delta P^{AS,1}$). The developing country is confronted with a diminishing agricultural comparative advantage, competitiveness losses, falling terms of trade and becomes a net agricultural importer. Assuming an initial equilibrium exchange rate, its currency will then be overvalued.

A developing country might gain from this development, if it manages to transform cheap wage goods in low industrial prices.

$$\frac{w^{IS,1}(\beta P^{AS,2} \downarrow e)}{\lambda^{IS,1}}(1 + q^{IS,1}) \Rightarrow P^{IS,1} \downarrow \quad (\text{Equation } 8b)$$

However, assuming higher unit labour costs in both sectors, the developing country has to devalue its currency (increase of nominal exchange rate). In this case, the import price inflation in agriculture spills over to industrial prices. It leads to a diametrically opposed tendency of real appreciation.

$$\frac{w^{IS,1}(\beta P^{AS,2} e \uparrow)}{\lambda^{IS,1}}(1 + q^{IS,1}) \Rightarrow P^{IS,1} \uparrow \quad (\text{Equation } 8c)$$

The higher the productivity disadvantage in agriculture, the more nominal exchange rate adjustment would consequently be necessary in order to enhance industrial price competitiveness.

$$P^{IS,1} \leq P^{IS,2} e \uparrow \quad (\text{Equation } 10b)$$

If a country chooses agricultural protection, while not being able to produce increasing demand with constant prices, the undervaluation is also jeopardized.

$$\frac{w^{IS,1}(\beta P^{AS,1} \uparrow e)}{\lambda^{IS,1}}(1 + q^{IS,1}) \Rightarrow P^{IS,1} \uparrow \quad (\text{Equation } 6b)$$

By any means, succeeds a country in strengthening agricultural productivity, it stabilises its macroeconomic setting and backs its undervaluation.

$$\frac{w^{IS,1} \left[\beta \frac{w^{AS,1}}{\lambda^{AS,1} \uparrow} (1 + q^{AS,1}) \right]}{\lambda^{IS,1}} (1 + q^{IS,1}) \Rightarrow P^{IS,1} \downarrow \quad (\text{Equation 7b})$$

The following illustration depicts the topic (Figure 5). On the y-axis are the developing country exports as dependent variable, on the x-axis the nominal exchange rate. The export function (Ex^l) has a positive slope. The higher the exchange rate the better its competitiveness in industrial goods.

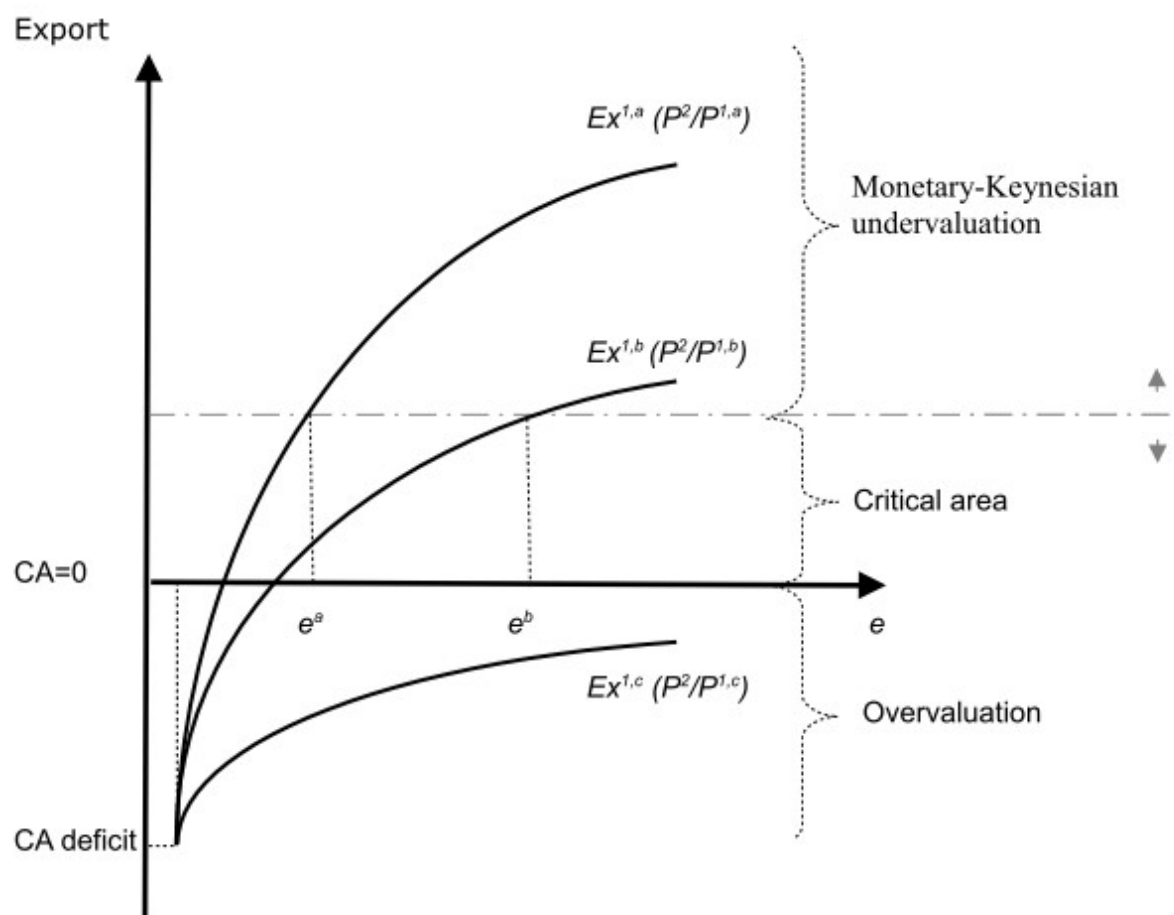


Figure 5: Illustration of the model

Source: Authors' construction

As shown above, competitiveness is determined by $P^l < P^2 * e$. Therefore, both country specific price levels P^l and P^2 are integrated. In the diagram P^2/P^l constitutes the position of the curve ($Ex^{l,a-c}$). The cases a, b and c describe different conditions. They are based on the influence of the nominal exchange rate on the national price level due to the agricultural spill over. The stronger these effects, the more flat the curve.²⁵

Towards a development process, it was argued, the developing country has to implement an undervaluation with simultaneous appreciation expectation. The range of overvaluation is

²⁵ Furthermore, the position of the export function Ex^l is determined by exogenous location parameters, which are not included in the formal model, but discussed above.

indicated by account deficit (CA deficit) and the Monetary-Keynesian undervaluation is demarcated by undervaluation, expectation of appreciation, and sufficient monetary stability. The critical range indicates export surplus which is insufficient to generate an appreciation expectation.²⁶ Moving inside this range might also shift the respective curve downward.²⁷ Obviously, $Ex^{l,a}$ surpasses into the undervaluation range at lower exchange rate as $Ex^{l,b}$. For $Ex^{l,c}$ exists no possibility to reach the Monetary-Keynesian range of undervaluation. In contrast $Ex^{l,a}$ has less restrictive preconditions. Any exchange rate higher than e^a allows the implementation of a Monetary-Keynesian macroeconomic constellation.

Conclusions

In a monetary production economy the role of credit is crucial for capital accumulation. When asset holders are willing to save part of their fortune in fixed nominal contracts it allows the creation of credit. Companies require these credits for investment, which determines production and employment. However, the asset and credit market imposes its condition for creditor-debitor contracts on the market systems - stable prices and exchange rates. Endogenous money becomes therefore scarce and appears to be the budget restriction of the economy. Due to the hierarchy of currency, the market process leads either to stagnation or an erosion of the monetary system in developing countries. Monetary-Keynesian theory suggests that in order to kick off development these countries must implement a mercantilist undervaluation with simultaneous appreciation expectation.

The functional condition of the market system caused not only a general stagnation in developing countries, but also led to an unequal sectoral development and to changes in comparative advantages. The agricultural productivity gap among OECD and sub-Saharan African countries has consequences on the world market. In addition, economic development prospects are affected. Because of a spill over from the agricultural to the industrial sector, the establishment of a macroeconomic undervaluation is now more difficult. Following a Monetary-Keynesian development strategy is hampered or even impossible due to low productivity in agriculture.

²⁶ The position of the border of the critical range is not fixed. Factors that influence the appreciation expectation affect also the size of the range. For example, the higher the preferences of the fiscal and monetary policy regarding monetary stability, the lower the line.

²⁷ In section “1.2 Economic stagnation and erosion of the monetary system”, argument (3) has shown, that a nominal exchange rate depreciation usually leads to a wage price spiral or depreciation capital flight spiral. Therefore, a movement on $Ex^{l,a}$ or $Ex^{l,b}$ originating by an current account deficit might shift the export function Ex^l downward.

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