

## **Low agricultural productivity in a monetary economy.**

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

**"Author"\***

### **Abstract**

The unimpeded functioning of market forces leads 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, money is endogenous – as opposed to the conventional neoclassical, post-Keynesian, or structuralist theories.

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 of agriculture. It will be shown how market conditions, especially those 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 of this significant rise in productivity, 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 actually impossible. A formal macroeconomic two-country two-sector partial model and a graphical illustration will capture key issues of the discussion.

\* [...]

Keywords: Economic Development, Agriculture, Structure, Comparative Advantage, Dependency, Monetary-Keynesian theory; JEL1: Macroeconomic Analyses of Economic Development (O11), JEL2: Open Economy Macroeconomics (F41)

HETECON version: Comments welcome.

Many thanks for helpful comments and discussion to [...] Remaining errors are of course mine.

## 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 still depend on agriculture (directly and indirectly). Furthermore, Africa was confronted with a rise in the crop price 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 regarding food crisis but also regarding overall social and economic development (Hazell 2002; Fulginiti et al. 2004).

When discussing theoretical economic aspects of agriculture in Africa, it is helpful to first clarify 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. If full employment is provided for in the long run, efficient international allocation of resources will lead to a Pareto optimum. Due to the low income level in developing countries, saving is too low (saving gap). Since saving is necessary to finance investment, developing countries lack resources. The 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.

The conclusion of post-Keynesian and structuralist development theories 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. They 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 then 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, a low income level is still caused by low savings, which is perceived as the restriction for development. Therefore, a favourable balance of payment position for a developing country shows a capital account surplus going 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, it 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. Agriculture has a prominent role in classical theory, but its macroeconomic relevance in modern economic development theory is only taken into consideration in an insufficient manner. Therefore, the causes and macroeconomic consequences of 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 concerning economic development. A Monetary Keynesian theory is presented showing how market processes either lead to 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 characterized by an undervaluation of the currency with simultaneous appreciation expectations. Following the Monetary Keynesian approach, section two introduces the agricultural sector in the analysis. A statistical evaluation of the

asymmetric historical evolution of agriculture in OECD and sub-Saharan African countries is conducted. This is done in order to explain how the development evolved and how this change affected the long term trend of prices on the world market. An examination of the implications of low agricultural productivity in a monetary economy on the industrial sector and the general economic development perspectives follows. Finally, a formal two-country two-sector model captures key issues of the discussion. The findings are also 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, aggregate production, employment and income. In a liberal economy, it is the firms, whose accumulated investments determine the level of employment. Nonetheless, time will usually pass between investment, employment, and companies' turnovers. Hence, two important consequences arise. The first is that the production process contains uncertainty. The second is the requirement of credit. The role of credit under this condition confers on money its dominant position in the market system. Without a doubt, money disposes of functions as a medium of exchange, as accounting unit, and for storing value. Still, regarding the market system, being a means of payment is its absolutely crucial function (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 as the conditions of advance money are determined both by the asset and the credit market. Doubtlessly, the central interest of an asset holder is to at least maintain the value of her asset. In a liberal economy, she will choose under the alternatives according to her preferences. Besides e. g. cash, gold and real estate, holding nominally fixed liabilities in domestic currencies is only one option. The latter leads to credit supply via the banking system. Due to the uncertainty in the production process, though, the value of the nominally fixed liabilities is not assured. Thus, in order to generate credit, the asset holders have to be motivated to take this risk by a pecuniary return. In the end, it is the asset holder who chooses among assets that either gain a non-pecuniary return due to their security or assets with a pecuniary return. This sovereign decision determines the extent of assets being available for money supply, credit and, finally, the production process itself (Riese 1990; Riese 2001a; Nitsch 1999; Betz 1993).

The pecuniary return expressed via the interest rate, has to be generated in the production process as profit. 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 productive physical capital, but on limited money supply instead. Interest is not an income generated by a resource, but solely based on private property on the credit and asset market (Riese 2001b; Schelkle 1995).

A 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 for the extent of investment, production, employment and, as a result, income. In the Monetary Keynesian theory, scarce money limits the employment of (real) resources and, thus, is the budget-restriction of the market system. Companies must set prices which 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. Therefore, full employment does not fulfil the requirements of the credit and asset market. It could either not be achieved or would lead to a

market disequilibrium. A Monetary Keynesian equilibrium, in the short and in the long run, implies a limited employment of resources (Fritsche 2004; Haslinger 1982; Clower 1963; Park 2004).

## ***1.2 Economic stagnation and the erosion of the monetary system***

Economic development means that a country moves from an equilibrium with a low level of employment to an equilibrium with a higher level of employment as well as higher income. Over time, a country must shift its budget-restriction. This requires the establishment of an asset market meeting the requirement of the market system. This is given, when asset holders accept the national currency for long term creditor-debitor contracts. Valid conditions for this purpose are a stable price level and a stable exchange rate. In order to constitute money, an inflationary expansive monetary or fiscal policy is not appropriate, because it is at odds with the decision calculus of the asset holders. In order to influence the preferences on the asset market, all policy measures have to target at 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 only rely on the market process. For the asset holder arises a further choice of action from the possibility to buy foreign currencies. Her 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 a systematic excess demand for foreign currencies, and to an excess supply of domestic currencies, respectively (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 of these solutions will lead to stagnation or to the 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, consequently, an increase in foreign exchange demand in the future. This in turn leads to inflation and depreciation expectation.<sup>1</sup> (b) Furthermore, foreign credit usually enhances inflation, because it could increase aggregate demand. This results in a further 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 for national nominal assets. An increase of the national interest rate would reduce the demand for foreign exchange. The idea is, that higher interest rates increase the pecuniary rate of return and motivate asset holders to buy domestic currency, (a) still, only short term credits denominated in foreign currency are commonly offered and, thus, lead to an increase of foreign debt. (b) The main problem is the stagnatory effect of high interest rates. 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-debitor contracts will shrink and will, thus, dampen investment, production and employment. When the situation stabilises, consequently, it is only at the expense of development (Schelkle 1992; Lüken-Klaßen 1993).

---

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

(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. Nonetheless, if the results are increases of import prices and nominal wages (wage price spiral), real appreciation reduces international competitiveness. On the asset market, inflation pressure and nominal depreciation make tangible assets and foreign currency more attractive (depreciation capital flight spiral). Additionally, a higher demand for tangible assets corresponds to an increase in the 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 usually requires a contraction of production via restrictive monetary policy, which is a contradiction to the development goal (stop and go policy). Altogether, the last option might generate a short term reduction in foreign exchange, but the instability of the price level and foreign exchange reduce acceptance of the domestic currency (Riese 1989; Riese 2001a; Betz & Lüken-Klaßen 1989).

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

A much broader discussion could analyse economic systems, which are not based a national currency or any money at all. The first aspect of no own national currency relates to the phenomena of dollarization. On the one hand, dollarization helps countries to control inflation, while 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 banks' abdications of being lenders 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 & Priewe 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' fortunes are not available for the production process, thus, limiting productivity and income. If the state seeks to circumvent this problem with an intense control of the asset market, it consequently abandons the fundamental principles of a liberal economy (Schelkle 1992; Nitsch 1999).

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

---

<sup>2</sup> 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 a result 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 adjust accordingly. However, relative price equalisation is the condition for optimal allocation. Furthermore, if the neoclassical efficiency criteria are not fulfilled, neoclassical policy recommendation is invalid.

### ***1.3 Mercantilist development strategy***

The necessary fulfilment of the functional conditions of the market system challenges development strategies.<sup>3</sup> 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 expectations induces demand driven growth.<sup>4</sup> Under this constellation, the developing country achieves export surpluses and resulting expansion of production, employment and income. Increases in income allow further saving and, due to the simultaneous appreciation expectation, more nominally fixed liabilities in domestic currencies (change in the liquidity preference). At the same time, profit expectations stabilise and raise demand for credit. Ideally, the central bank supports the undervaluation via neutralization and sterilization.<sup>5</sup> 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. In such a regime, these countries accumulate foreign exchange reserves and so execute strategic capital export. However, the world's current accounts balance has to be zero. Thus, industrialised countries policies make it even more difficult for developing countries to avoid a net capital import and an overvalued currency – especially, as 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 to this difficulty of developing countries. Finally, international rules of the World Bank and the World Trade Organisation prohibit protectionist measures. While these circumstances limit the policy options of developing countries, industrialised countries' mercantilist policies are in accordance with free trade (Betz & Lüken-Klaßen 1989; Riese 1989). Therefore, under the condition of the current global financial architecture and the ongoing financial crisis, it will be difficult to enforce Africa's interests.

---

<sup>3</sup> It is generally acknowledged that growth alone does not make a country successful. For example, growth is no 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 [...] are the main driver of growth in most of the successful development episodes” (Herr & Prieue 2005, p.41).

<sup>4</sup> 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).

<sup>5</sup> Obviously, the central bank cannot support the capital accumulation process directly with an expansive monetary policy. In order to guarantee the scarcity of money, the latter 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 has an effect on the development process. This is due to the central bank's changed asset holders' preferences and it 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 the 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 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.

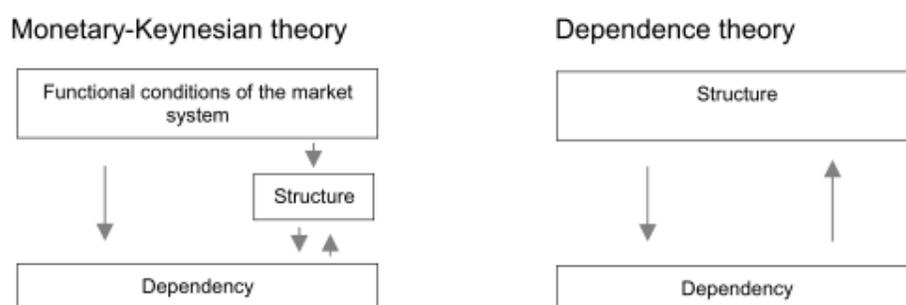


Figure 1: Monetary Keynesian theory vs. Dependence theory

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 (SSA) countries and 21 high income OECD countries.<sup>6</sup> The average cereal yield in 1961 in the OECD countries was about 3 times higher compared to SSA countries. Over time, yield in the OECD increased up to 5,422 kg and in the SSA countries only up to 1,144 kg in 2004. The gap widened and the OECD countries extended their leading position in cereal yield over the SSA countries and are now almost 5 times more productive ("Author" 2007).

<sup>6</sup> 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.

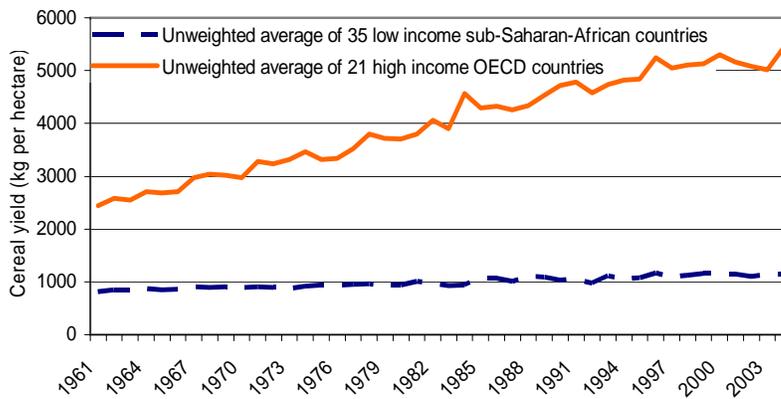


Figure 2: Development of cereal yield of 35 low-income sub-Saharan African countries and 21 high-income OECD countries (kg per hectare, unweighted average, 1961-2004)

Source: Graph data calculated from the World Development Indicators 2005 ("Author" 2007, p. 19)

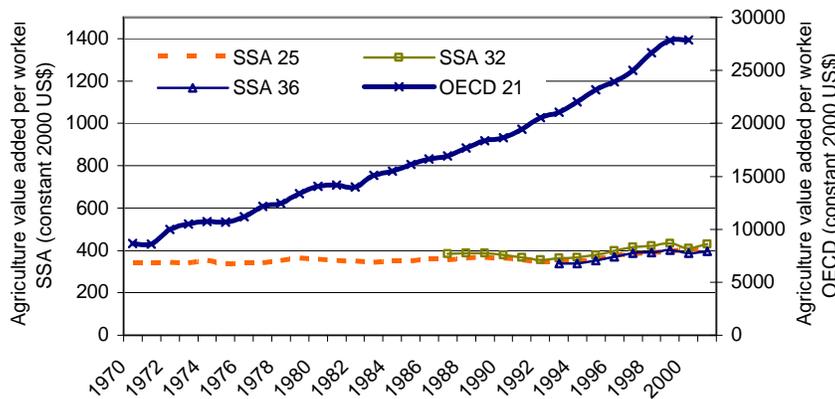


Figure 3: Agriculture value added per worker of 21 high-income OECD countries (1970-2001) and 25, 32, 36 low-income sub-Saharan African countries (1971-2001, constant 2000 US\$, unweighted average)

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.<sup>7</sup> Value added per worker in agriculture in SSA countries increased from 346 US \$ in 1971 to 410 US \$ in 2001 (primary y-axis) in contrast to the OECD countries 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

<sup>7</sup> 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, Mozambique, Tanzania.

increased its advance even further with the result that its labour productivity is now 68 times higher ("Author" 2007).<sup>8</sup>

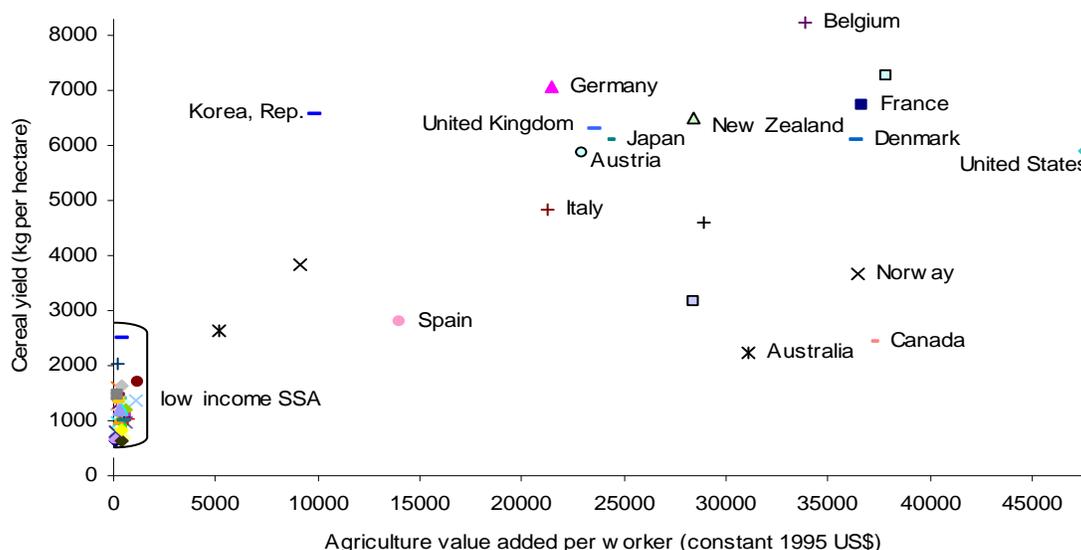


Figure 4: Cereal yield (kg per hectare) and agriculture value added per worker (constant 1995 US\$) of all high-income OECD and low-income SSA countries\* in 2001;

Note: \* where data is available

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

The immense difference in land and labour productivity between developed and developing countries is collated in Figure 4. This figure 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 ("Author" 2007).

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, the productivity growth rate in manufacture exceeded that of agriculture, while this relation was completely reversed in the post-war period. In developed countries, productivity growth rates in agriculture exceed those in the industrial sector for decades (Bairoch 1997; D. G. Johnson 1991; "Author" 2007).

The agriculture in Western Europe and North America in the early 19<sup>th</sup> century was similar to that of most developing countries today (D. G. Johnson 1991), but changed fundamentally in the second half of the 20<sup>th</sup> century.<sup>9</sup> The technological catch-up process of modernization in agriculture was feasible due to favourable monetary conditions. On the one hand, a generally

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

<sup>9</sup>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 the 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. 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; "Author" 2007).

successful monetary economy was already established. And on the other hand, agricultural policy stabilised profit expectation and decreased risk. As a result, 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 as well as investment. Over time, experience and economies of scale and scope have also improved the agricultural technology, which then, in turn, changed the factor ratios and improved the means 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).<sup>10</sup> Farming in high-income countries turned into a sophisticated, dynamic industry relying on new and more effective machinery, such as tractors, electric motors, hydraulic devices, air conditioning, and computers, as well as on other green technology, such as fertilisers, pesticides, herbicides, vitamins, antibiotics, synthetic proteins, and new seeds. Modern farming, furthermore, 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 agricultural productivity growth rate exceeded that of nominal wages, so that not only comparative advantage, but also competitiveness improved ("Author" 2004; "Author" 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 was aggravated.<sup>11</sup> This is due to the fact that fluctuating supply and turnover result in unstable profit expectation. This in turn makes debt services and interest payments uncertain. Land is a popular tangible asset due to its relatively stable value and, therefore, overpriced in the context of agricultural production. Finally, policy in developing countries often discriminates agricultural production ("Author" 2004; "Author" 2007; Wharton 1971; Cook et al. 2008; Ogbe 1991; Ndikumana 2006; Timmer & Dawe 2007). To put it in a nutshell, high interest rates and uncertainty allow only marginal investment as well as technological input and, thus, lead to a low level of productivity and income in agriculture. The export performance and its traditional surplus in agricultural trade of SSA countries 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).

---

<sup>10</sup> Economic structural change in industrialised countries is well recognised and 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, thus, indicates the potential of a declining share of labour force to provide agricultural commodities for the whole society ("Author" 2007).

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

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).<sup>12</sup> 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 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.<sup>13</sup> 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.<sup>14</sup> 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.<sup>15</sup>

---

<sup>12</sup> 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).

<sup>13</sup> 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).

<sup>14</sup> 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).

<sup>15</sup> 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.

## ***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.<sup>16</sup>

(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; Ogbe 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.<sup>17</sup> 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).<sup>18</sup>

(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.<sup>19</sup> Low

---

<sup>16</sup> 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 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.

<sup>17</sup> 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).

<sup>18</sup> 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).

<sup>19</sup> 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

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; Ogbe 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.<sup>20</sup> 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.<sup>21</sup> 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 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.<sup>22</sup> 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.<sup>23</sup>

---

scenarios of real income effects resulting from food prices changes based on different stylized facts and possible parameters (Dessus et al. 2008).

<sup>20</sup> 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).

<sup>21</sup> 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 Senegal. 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).

<sup>22</sup> 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).

<sup>23</sup> 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).

(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 developing 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 ( $w/\lambda$ ; productivity  $\lambda$  and wage  $w$ ) and profit  $q$ .<sup>24</sup>

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

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

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:

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

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

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

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

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

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

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.

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

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.

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

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.

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.<sup>25</sup>

Towards a development process, it was argued, the developing country has to implement an undervaluation with simultaneous appreciation expectation. The range of overvaluation is 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.<sup>26</sup> Moving inside this range might also shift the respective curve downward.<sup>27</sup>

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.

<sup>25</sup> 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.

<sup>26</sup> 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.

<sup>27</sup> 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.

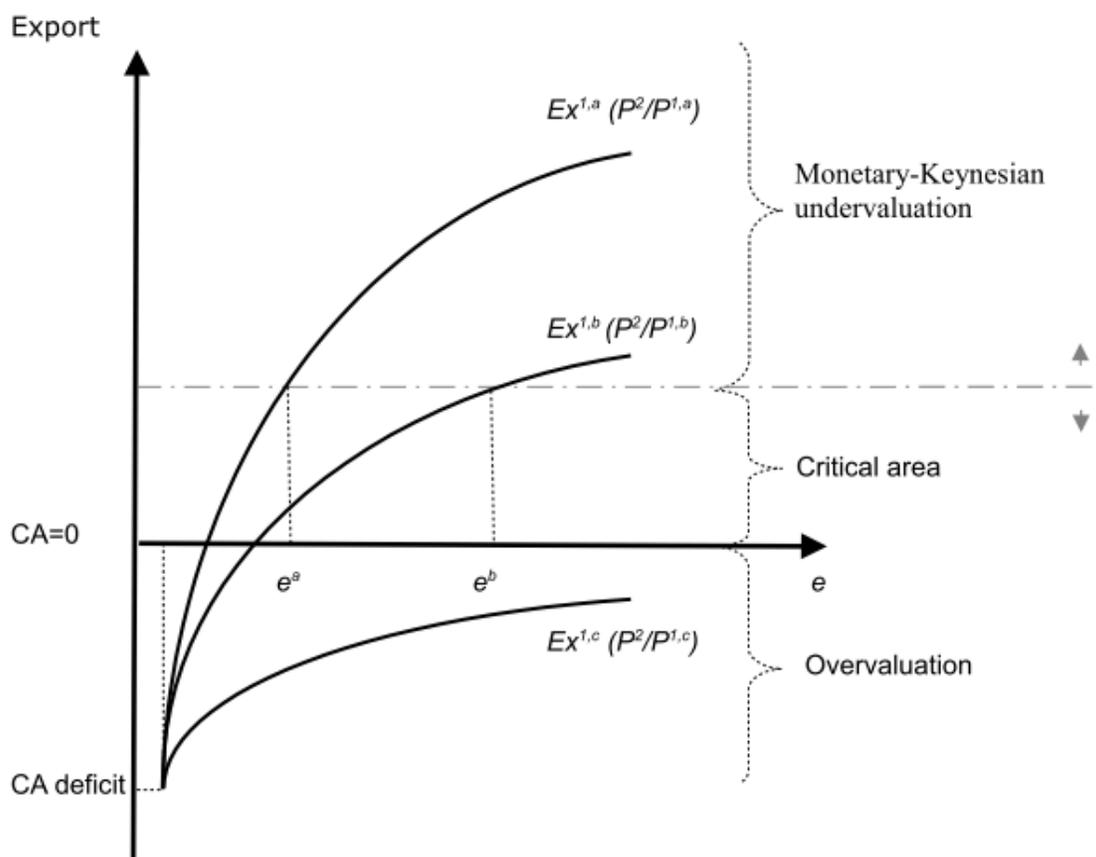


Figure 5: Illustration of the model  
 Source: Authors' construction

## 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-debtor 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.

## Bibliography

- Abbott, P., Hurt, C. & Tyner, W., 2008. *What's driving food prices?*, Farm Foundation Issue Report, Farm Foundation, Oak Brook, IL. Available at: <http://www.farmfoundation.org/news/templates/template.aspx?articleid=404> [Accessed March 24, 2009].
- Aksoy, M. A. & Ng, F., 2008. Food price increases and net food importing countries. *Agricultural Economics*, 39(3), 443-452.
- Anderson, K., 2006. Reducing distortions to agricultural incentives. *American Journal of Agricultural Economics*, 88(5), 1135-1146.
- Bairoch, P., 1997. New Estimates on Agricultural Productivity and Yields of Developed Countries, 1800-1900. In A. Bhaduri & R. Skarstein, eds. *Economic Development and Agricultural Productivity*. Cheltenham: Edward Elgar, pp. 45-57.
- Balassa, B.A., 1964. The purchasing-power parity doctrine. *The Journal of Political Economy*, 72(6), 584-596.
- Bello, W., 2008. *Destroying African agriculture*, Foreign Policy in Focus, 4 June 2008, Institute for Policy Studies. Available at: Institute for Policy Studies, <http://www.fpif.org/fpiftxt/5271> [Accessed March 24, 2009].
- Betz, K., 1993. *Ein monetärkeynesianisches makroökonomisches Gleichgewicht*, Marburg: Metropolis-Verl.
- Betz, K., 2001. *Jenseits der Konjunkturpolitik: Überlegungen zur langfristigen Wirtschaftspolitik in einer Geldwirtschaft*, Marburg: Metropolis-Verl.
- Betz, K. & Lüken-Klaßen, M., 1989. Weltmarkt und Abhängigkeit. In H. Riese & H. Spahn, eds. *Internationale Geldwirtschaft*. Studien zur monetären Ökonomie. Regensburg: Transfer-Verlag, pp. 217-265.
- Branchi, M., Spiezia, V. & Gabriele, A., 1999. *Traditional agricultural exports, external dependency and domestic price policies*, Geneva: UNCTAD.
- Brown, M. & Goldin, I., 1992. *The future of agriculture: developing country implications*, Paris: OECD.
- Bruinsma, J. ed., 2003. *World agriculture: towards 2015 2030: an FAO perspective*, London: Earthscan.
- Chauffour, J., 2008. *Global Food Price Crisis: Trade Policy Origins and Options*, Trade Notes 34, July 24, 2008, World Bank. Available at: [http://siteresources.worldbank.org/INTRANETTRADE/Resources/239054-1126812419270/Trade\\_Note\\_34\\_Jul\\_24\\_08.pdf](http://siteresources.worldbank.org/INTRANETTRADE/Resources/239054-1126812419270/Trade_Note_34_Jul_24_08.pdf) [Accessed March 27, 2009].
- Cleaver, K. & Donovan, G., 1995. *Agriculture, Poverty and Policy Reform in Sub-Saharan Africa*, Washington D.C.: World Bank.

- Clower, R., 1963. Die Keynesianische Gegenrevolution: eine theoretische Kritik. *Swiss Journal of Economics and Statistics*, 99(1), 8-31.
- Collignon, S., 2002. *Monetary stability in Europe*, London [u.a.]: Routledge.
- Cook, M. L., Iliopoulos, C. & Klein, 2008. Contracting and organization in food and agriculture. In E. Brousseau & J. Glachant, eds. *New institutional economics*. Cambridge [u.a.]: Cambridge Univ. Press, pp. 292-304.
- Dessus, S., Herrera, S. & Hoyos, R.D., 2008. The impact of food inflation on urban poverty and its monetary cost: some back-of-the-envelope calculations. *Agricultural Economics*, 39(3), 417-429.
- Devashish, M. & Will, M., 1999. *Productivity Growth and Convergence in Agriculture and Manufacturing*, Washington D.C.: World Bank.
- Dewbre, J. et al., 2008. High food commodity prices: will they stay? who will pay? *Agricultural Economics*, 39(3), 393-403.
- Diao, X., Headey, D. & Johnson, M., 2008. Toward a green revolution in Africa: what would it achieve, and what would it require? *Agricultural Economics*, 39, 539-550.
- Domar, E. D., 1946. Capital Expansion, Rate of Growth, and Employment. *Econometrica*, 14(2), 137-147.
- Drummond, P. & Wakeman-Lynn, J., 2008. *Impact on poor: Coping With Food Price Increases in Sub-Saharan Africa*, IMF Survey Magazine: Countries & Regions, March 20, 2008, IMF African Department. Available at: <http://www.imf.org/external/pubs/ft/survey/so/2008/CAR032008A.htm> [Accessed March 10, 2009].
- Dutt, A. & Ros, J., 2003. Development economics and political economy. In A. Dutt & J. Ros, eds. *Development economics and structuralist macroeconomics : essays in honor of Lance Taylor*. Cheltenham UK; Northampton MA: Edward Elgar, pp. 3-30.
- Easterly, W., 1999. The ghost of financing gap: testing the growth model used in the international financial institutions. *Journal of Development Economics*, 60(2), 423-438.
- ECLAC, 2008. Former Executive Secretaries. *About ECLAC*. Available at: [http://www.cepal.cl/cgi-bin/getprod.asp?xml=/noticias/paginas/6/21986/P21986.xml&xsl=/tpl-i/p18fst.xml&base=/tpl-i/top-bottom\\_acerca.xml](http://www.cepal.cl/cgi-bin/getprod.asp?xml=/noticias/paginas/6/21986/P21986.xml&xsl=/tpl-i/p18fst.xml&base=/tpl-i/top-bottom_acerca.xml) [Accessed November 7, 2008].
- Elsenhans, W., 2001. Entwicklung ist machbar. Die Schaffung von Arbeitsplätzen durch zeitweilige Subventionierung. In R. E. Thiel, ed. *Neue Ansätze zur Entwicklungstheorie*. Bonn: Deutsche Stiftung für internationale Entwicklung (DSE), Informationszentrum Entwicklungspolitik (IZEP), pp. 135-146.
- European Commission, 2004. *Agricultural Commodity Chains, Dependence and Poverty. A proposal for an EU Action Plan*, Brussels: COM(2004)89 final 12.02.2004, Commission of the European Communities.

- European Commission, 2003. *Agricultural Commodity Trade, Dependence and Poverty: An Analysis of Challenges Facing Developing Countries*, Brussels: Commission Staff Working Paper, SEC(2003) 908, 13.8.2003, European Fair Trade Association (EFTA).
- European Commission, 2005. *Opening the Door to Development. Developing Country Access to EU Markets 1999-2003*, Brussels: Directorate-General for Trade.
- Fan, S. & Headey, D., 2008. Anatomy of a crisis. *Agricultural Economics*, 39(3), 375-391.
- FAO, 2001. *The role of agriculture in the development of LDCs and their integration into the world economy*, Geneva: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/DOCREP/003/Y0491E/Y0491E00.HTM> [Accessed September 28, 2009].
- Flassbeck, H., 2005. Saving, investment, debt and the transfer problem. In G. Chaloupek, ed. *Sisyphus als Optimist*. Hamburg: VSA-Verl., pp. 329-351.
- Fouere, T. et al., 2000. Dietary changes in African urban households in response to currency devaluation: foreseeable risks for health and nutrition. *Public Health Nutr*, 3(3), 293-301.
- Fritsche, U., 2004. *Stabilisierungs- und Strukturanpassungsprogramme des Internationalen Währungsfonds in den 90er Jahren: Hintergründe, Konzeptionen und Kritik*, Berlin: Duncker & Humblot.
- Frydman, R., 1982. Towards an understanding of market processes. *The American Economic Review*, 72(4), 652-668.
- Fuglie, K. O., 2008. Is a slowdown in agricultural productivity growth contributing to the rise in commodity prices? *Agricultural Economics*, 39, 431-441.
- Fulginiti, L. E., Perrin, R.K. & Yu, B., 2004. Institutions and agricultural productivity in Sub-Saharan Africa. *Agricultural Economics*, 31(2-3), 169-180.
- Goldberg, M. D. & Frydman, R., 1996. Imperfect Knowledge and Behaviour in the Foreign Exchange Market. *The Economic Journal*, 106(437), 869-893.
- Greenwald, B. C. N. & Stiglitz, J. E., 2003. *Towards a new paradigm in monetary economics*, Cambridge [u.a.]: Cambridge Univ. Press.
- Harrod, R. F., 1939. An essay in dynamic theory. *The Economic Journal*, 49, 15-33.
- Harrod, R. F., 1948. *Towards a dynamic economics: some recent developments of economic theory and their application to policy*, London: Macmillan.
- Harrop, J., 2000. *The political economy of integration in the European Union*, Cheltenham [u.a.]: Elgar.
- Haslinger, F., 1982. Walras-Gesetz. *Wirtschaftswissenschaftliches Studium*, 11(5), 226-229.

- Hauskrecht, A., 1998. *Monetäre Aspekte des Transformationsprozesses*, Marburg: Metropolis-Verl.
- Hauskrecht, A., 2000. Nettokapitalimporte - ein Entwicklungshemmnis? In F. Hengsbach & B. Emunds, eds. *Finanzströme in Entwicklungsländer - in welcher Form zu wessen Vorteil?* Frankfurter Arbeitspapiere zur gesellschaftsethischen und sozialwissenschaftlichen Forschung. Frankfurt am Main: Oswald-von-Nell-Breuning-Inst. für Wirtschafts- und Gesellschaftsethik, pp. 24-32.
- Hazell, P., 2002. *Challenges and Opportunities for Agriculture in African Agriculture*, Washington, D.C.: International Food Policy Research Institute.
- Heine, M. & Herr, H., 2000. *Volkswirtschaftslehre* 2 ed., München [u.a.]: Oldenbourg.
- Herr, H. & Priewe, J., 2005. *The macroeconomics of development and poverty reduction: strategies beyond the Washington consensus* 1. ed., Baden-Baden: Nomos-Verl.
- Hussain, M. N. & Thirlwall, A. P., 1982. The balance of payments constraint, capital flows and growth rate differences between developing countries. *Oxford economic papers*, 34(3), 498-510.
- ILO, 2005. *World Employment Report 2004-05: Employment, Productivity and Poverty Reduction*, Geneva: International Labour Organization. Available at: <http://www.ilo.org/public/english/employment/strat/wer2004.htm> [Accessed July 14, 2005].
- IMF, 2008. *Food and fuel prices: recent developments, macroeconomic impact and policy responses*, Fiscal Affairs, Policy Development and Review, and Research Departments, International Monetary Fund, Washington, DC. Available at: [www.imf.org/external/np/pp/eng/2008/063008.pdf](http://www.imf.org/external/np/pp/eng/2008/063008.pdf) [Accessed April 5, 2009].
- Ivanic, M. & Martin, W., 2008. Implications of higher global food prices for poverty in low-income countries. *Agricultural Economics*, 39, 405-416.
- Johnson, D. G., 1991. *World agriculture in disarray*, Basingstoke [u.a.]: Macmillan.
- Johnson, S., 2007. *The (Food) Price of Success*, Finance & Development, Vol. 44, No. 4, December 2007, IMF. Available at: <http://www.imf.org/external/pubs/ft/fandd/2007/12/straight.htm> [Accessed March 22, 2009].
- Johnston, B. F. & Mellor, J. W., 1961. The role of agriculture in economic development. *The American Economic Review*, 51(4), 566-593.
- Langley, S., Peters, M. & Westcott, P., 2008. *Agricultural Commodity Price Hikes in the 1970s and 1990s: Valuable Lessons for Today*, Amber Waves, March 2009, United States Department of Agriculture. Available at: <http://www.ers.usda.gov/AmberWaves/March09/Features/AgCommodityPrices.htm> [Accessed March 25, 2009].
- Lewis, W. A., 1953. Industrialisation and the Gold Coast – Gold Coast Government. Report on the Industrialisation and the Gold Coast. In G. Dalton, ed. *Economic Development*

- and *Social Change: the modernization of village communities*. New York: The Natural History Press, pp. 597-618.
- Lewis, W. A., 1980. The slowing down of the engine of growth. *The American Economic Review*, 70(4), 555-564.
- Lucas, R. E., 1972. Expectations and the neutrality of money. *Journal of Economic Theory*, 4(2), 103-124.
- Lüken-Klaßen, M., 1993. *Währungskonkurrenz und Protektion*, Marburg: Metropolis-Verl.
- Matsuyama, K., 1992. Agricultural productivity, comparative advantage, and economic growth. *Journal of Economic Theory*, 58(2), 317-334.
- McCartney, M., 2004. Dynamic versus Static Efficiency: The Case of Textile Exports from Bangladesh and the Developmental State. *Post-autistic Economics Review*, (26, Article 4, 2 August 2004). Available at: <http://www.paecon.net/PAERReview/issue26/McCartney26.htm> [Accessed March 25, 2009].
- McKinnon, R. I., 1973. *Money and capital in economic development*, Washington, DC: Brookings Inst.
- Morgan, W. B. & Solarz, J. A., 1994. Agricultural Crisis in Sub-Saharan Africa: Development Constraints and Policy Problems. *The Geographical Journal*, 160(1), 57-73.
- Mundlak, Y., Larson, D. & Butzer, R., 1997. *The determinants of agricultural production: a cross-country analysis*, Washington, DC: World Bank, Development Research Group.
- Muth, J. F., 1961. Rational expectations and the theory of price movements. *Econometrica*, 29(3), 315-335.
- Ndikumana, L., 2006. *Revisiting Development Finance Institutions for the Purpose of Accelerating African Economic Development*, University of Massachusetts. Available at: <http://www.afdb.org/pls/portal/url/ITEM/22FF6E9ABF008107E040C00A0C3D2DA7>.
- Nitsch, M., 1999. Entwicklungstheorie unter Unsicherheit. Das Investitionsrisiko als Motor und Störquelle von Entwicklung. In *Neue Ansätze zur Entwicklungstheorie*. Bonn: Dt. Stiftung für Internationale Entwicklung, pp. 312-320.
- Nitsch, M. & Nicolas, A., 2005. *Lateinamerika als Passion: Ökonomie zwischen den Kulturen, ein Interview mit Manfred Nitsch*, Berlin: Freie Univ. Available at: [http://opus.zbw-kiel.de/volltexte/2005/3744/pdf/discpaper13\\_05.pdf](http://opus.zbw-kiel.de/volltexte/2005/3744/pdf/discpaper13_05.pdf) [Accessed March 13, 2008].
- Nurkse, R., 1953. *Problems of capital formation in underdeveloped countries*, Oxford: Blackwell.
- Ogbe, G., 1991. *Ernährungssicherungspolitik in Schwarzafrika: ökonomische Analyse und Entwicklungsstrategien am Beispiel des Sudans*, Frankfurt am Main [u.a.]: Lang.

- Park, K., 2004. *Geld und Beschäftigung in verschiedenen ökonomischen Paradigmen*. Freie Univ. Available at: <http://www.diss.fu-berlin.de/cgi-bin/zip.cgi/2004/195/Fub-diss2004195.zip> [Accessed June 17, 2008].
- Pelkmans, J., 2006. *European integration* 3undefined ed., Harlow [u.a.]: Financial Times Prentice Hall.
- Prebisch, R., 1959. Commercial Policies in Underdeveloped Countries. *American Economic Review*, 49(2), 251-273.
- Prebisch, R., 1964. *Towards a new trade policy for development*, New York: United Nations.
- Rauch, J. E. & Meier, G. M., 2005. *Leading issues in economic development* 8undefined ed., New York, NY [u.a.]: Oxford Univ. Press.
- Riese, H., 2001a. *Das Projekt eines monetären Keynesianismus 1. Grundlegungen eines monetären Keynesianismus* K. Betz, ed., Marburg: Metropolis-Verl.
- Riese, H., 2001b. *Das Projekt eines monetären Keynesianismus 2. Angewandte Theorie der Geldwirtschaft* K. Betz, ed., Marburg: Metropolis-Verl.
- Riese, H., 1990. *Geld im Sozialismus*, Regensburg: Transfer-Verl.
- Riese, H., 1989. Schuldenkrise und ökonomische Theorie. In H. Riese & H. Spahn, eds. *Internationale Geldwirtschaft*. Studien zur monetären Ökonomie. Regensburg: Transfer-Verlag, pp. 187-216.
- Rostow, W. W., 1960. *The stages of economic growth: a non-communist manifesto*, Cambridge: Univ. Press.
- Roy, T., 2000. *Ursachen und Wirkungen der Dollarisierung von Entwicklungsländern: ein Erklärungsansatz unter besonderer Berücksichtigung Boliviens*, Marburg: Metropolis-Verl.
- Ruttan, V. W., 2002. Productivity Growth in World Agriculture: Sources and Constraints. *The Journal of Economic Perspectives*, 16(4), 161-184.
- Sargent, T. J., 2008. Rational Expectations. In *The Concise Encyclopedia of Economics*. Library of Economics and Liberty. Available at: [www.econlib.org/library/Enc/RationalExpectations.html](http://www.econlib.org/library/Enc/RationalExpectations.html) [Accessed October 19, 2008].
- "Author [...]
- "Author" [...]
- Schelkle, W., 1995. Die Theorie der geldwirtschaftlichen Entwicklung. *Entwicklung und Zusammenarbeit*, (10/1995), 267-270.
- Schelkle, W., 1992. *Konstitution und Erosion einer Geldwirtschaft*, Berlin: DIE.
- Shaw, E. S., 1973. *Financial deepening in economic development*, New York: Oxford Univ. Pr.

- Singer, H. W., 1950. The Distribution of Gains between Investing and Borrowing Countries. *The American Economic Review*, 40(2), 473-485.
- Singer, H. W., 1975. *The strategy of international development*, London [u.a.]: Macmillan.
- Stadermann, H., 1989. Die Neoklassik in der Krise. In H. Riese & H. Spahn, eds. *Internationale Geldwirtschaft. Studien zur monetären Ökonomie*. Regensburg: Transfer-Verlag, pp. 60-105.
- Taylor, L., 1993. *The Rocky road to reform: adjustment, income distribution, and growth in the developing world*, Cambridge Mass.: MIT Press.
- Taylor, L., 1996. Sustainable development: An introduction. *World Development*, 24(2), 215-225.
- Taylor, L., 2004. *Reconstructing macroeconomics*, Cambridge, Mass. [u.a.]: Harvard Univ. Press.
- Thirlwall, A. P., 1979. The balance of payments constraint as an explanation of international growth rate differences. *Quarterly review, Banca Nazionale del Lavoro, Roma*, 128, 45-53.
- Thirlwall, A. P., 2004. *The Mobilisation of Savings for Growth and Development in Developing Countries*, Santo Domingo, Dominican Republic: Departamento de Programación Monetaria e Investigación Económica.
- Timmer, P. & Dawe, D., 2007. Managing Food Price Instability in Asia: A Macro Food Security Perspective. *Asian Economic Journal*, 21(1), 1-18.
- Tinbergen, J., 1965. Spardefizit und Handelsdefizit. *Weltwirtschaftliches Archiv*, 95(1), 89-101.
- Todaro, M. P., 1989. *Economic development in the Third World*, New York [u.a.]: Longman.
- Trostle, R., 2008a. *Fluctuating Food Commodity Prices: A Complex Issue With No Easy Answers*, Amber Waves, November 2008, United States Department of Agriculture. Available at: <http://www.ers.usda.gov/AmberWaves/November08/Features/FoodPrices.htm> [Accessed March 19, 2009].
- Trostle, R., 2008b. *Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices*, Outlook Report No. (WRS-0801), July 2008, United States Department of Agriculture, Available at: <http://www.ers.usda.gov/Publications/WRS0801/> [Accessed March 26, 2009].
- UNCTAD, 2004. *Policy coherence, development strategies and integration into the world economy*, New York and Geneva: UN.
- Wharton, C. R., 1971. Risk, uncertainty, and the subsistence farmer. In G. Dalton, ed. *Economic Development and Social Change: the modernization of village communities*. New York: The Natural History Press, pp. 566-574.

- Wodon, Q. T. & Zaman, H., 2008. *Rising Food Prices in Sub-Saharan Africa: Poverty Impact and Policy Responses*, Policy Research Working Paper, No. 4738, Oct. 2008, World Bank. Available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1277057](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1277057) [Accessed August 21, 2009].
- Wood, A. & Mayer, J., 1998. *Africa's export structure in a comparative perspective*, Geneva: United Nations.
- World Bank, 2008. *Addressing the Food Crisis: The Need for Rapid and Coordinated Action*, Washington: Group of Eight Meeting of Finance Ministers. Available at: [www.worldbank.org/html/extdr/foodprices/pdf/G8\\_food%20price%20paper.pdf](http://www.worldbank.org/html/extdr/foodprices/pdf/G8_food%20price%20paper.pdf) [Accessed April 5, 2009].