

The Structuralist Theory of Inflation in Developing Countries

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Abstract

Before the onset of COVID-19 and the high inflation that followed, economies all over the world found themselves in a state of steady disinflation. Many economists viewed these developments as generally positive. However, there is an alternative theory of inflation known as The Structuralist Theory. It puts forward the idea that inflation is determined not only by variables like the money supply and interest rates, known as monetary variables, but also by other forces within the economy. These other forces are known as Structuralist variables and they tend to be outside of the direct control of the central bank. Much of the early literature focused on issues within the agricultural sector. Said issues were cited as the reason for the high inflation many Latin American countries experienced in past decades. This school of thought stood in contrast to the Monetarists, who believed that the money supply was the only variable causing this phenomenon. However, more recent literature has focused on a variety of Structuralist variables including the import price and the labor share. Notably, if the labor share and inflation have a direct relationship, this means that recent disinflation has come at the cost of increasing income inequality. This study analyzed the relationship between inflation and the labor share and import price in developing countries and as such was a combination of the old and new literature. Using fixed effects models, we found that monetary variables were the only potential determinants of inflation that had any kind of significant correlation. This is not to say that the Structuralist theory is completely wrong, only that the import price and the labor share appear to have no effect.

1. Introduction

The Structuralist Theory of Inflation states that inflation is determined, to some extent, by non-monetary variables. Two such non-monetary variables that some of the newer literature has focused on are the import price and the labor share (Taylor, Lance, and Barbosa-Filho, 2021). The import price index is defined as a measure of “changes in the prices of imports of merchandise into a country” (OECD, 2001). Therefore, inflation that results from increases in the import price can be seen as “imported inflation.” The labor share is defined as the percentage of output or GDP that workers receive. Thus, this measurement can be seen as a proxy for the degree to which workers are being fairly compensated for their time and more generally, income inequality. Given the widespread trends of disinflation that we have seen in recent years, if the labor share and inflation have a direct relationship this could mean that disinflation has come at the cost of increasing inequality.

Much of the early research on the Structuralist Theory of inflation was done on developing countries in Latin America (Fischer, Bernard, and Mayer, 1980; Olivera, Julio H.G, 1964; Wachter, Susan M., 1979). However, not a lot of research has been done in recent years studying this theory in developing countries specifically. That will be what this paper sets out to do. The research question this paper will ask is, “are import prices and the labor share determinants of inflation in developing countries?”

Data from over thirty developing countries is used. The dataset includes the import price and labor share, as well as three other well-known determinants of inflation, which are used as control variables. A fixed-effects regression model will be the primary mode of analysis.

2. Theory Overview

Traditionally, inflation has been seen as a largely monetary phenomenon. In other words, many scholars believe that it is primarily controlled by factors such as the money supply and interest rates. The Structuralist Theory, on the other hand, presents inflation as a somewhat non-monetary phenomenon. This means that it is controlled by forces outside of the central bank's power, the import price and the labor share being prime examples. There is empirical evidence that supports the idea that some non-monetary variables do indeed influence inflation (Calderón, César, and Schmidt-Hebbel 2008; Taylor, Lance, and Barbosa-Filho, 2021).

As has been stated above, the labor share is the percentage of output or GDP that workers receive back in the form of wages. The reason that an increase in this metric could cause an increase in inflation is that in order for said metric to go up there would need to be an increase in wages that would likely be passed along to the consumer. This is because the owners of companies and capital generally demand the same, if not increasing profit margins, so the only way the labor share could feasibly increase would be through an increase in wages, which could lead to inflation. This conflict between owners and workers is an essential part of the Structuralist Theory and is referred to as “conflicting claims” (Taylor, Lance, and Barbosa-Filho, 2021). Thus, according to the Structuralist Theory changes in inflation have a considerable social aspect. If inflation and the labor share have a direct relationship this would imply that in order for workers to get a larger share of what they produce inflation must also rise. Of course, inflation rates that are too high are quite problematic for economies and thus some sort of balance would need to be achieved between these two variables.

An increase in the import price could lead to inflation because if goods being imported into a country are increasing in price this cost could be passed along to consumers in the same way that the cost of a higher wage could. An increase in the broad money supply could lead to inflation because more money circulating in the economy could lead to higher levels of demand and thus an increase in prices. Interest rates are controlled by the central bank and are supposed to have an indirect impact on inflation. Essentially, higher interest rates may lead to a decrease in borrowing and thus less spending. This would lead to a decrease in aggregate demand. Therefore, inflation and interest rates are generally seen as having an inverse relationship.

Over the course of the past forty years the world has seen a generally disinflationary trend. Low inflation is conventionally seen as a positive phenomenon. After all, one of the Fed's dual mandates is “low and stable inflation.” However, this phenomenon is less positive when seen through the lens of the Structuralist Theory. Essentially, if the theory is correct, this disinflationary trend indicates that workers are being given a smaller and smaller share of what they produce back in the form of wages, as time has progressed. This is congruent with trends we see in the contemporary world. As production becomes increasingly capital intensive, the owners of said capital are becoming increasingly wealthy. On the other hand, many workers are not reaping the benefits of this new technologically advanced world in the form of higher wages. Instead, many individuals have found themselves completely out of work. This has led to a variety of social issues including the “deaths of despair” documented by Angus Deaton and Anne Case in their book *Deaths of Despair and the Future of Capitalism* (2018). All in all, we find ourselves in a situation characterized by increasing production and lower inflation rates, both of which are seen as positive economic indicators, while simultaneously many people who live in these economies are greatly suffering. The Structuralist Theory of Inflation provides a new lens with which to look at the supposedly positive economic phenomenon of decreasing and low inflation.

If inflation is indeed a non-monetary phenomenon this has a variety of significant policy implications. Specifically, less emphasis would need to be put on the central bank and more emphasis would need to be placed on modulating these non-monetary determinants. Influencing these variables would likely be harder than influencing the money supply and the interest rate, but it is by no means impossible. Additionally, if the Structuralist Theory proves to be correct the lens through which we see inflation and particularly widespread decreasing inflation would be significantly altered. These insights are what make this paper significant.

3. Literature Review

There is a vast quantity of empirical literature on the Structuralist Theory. These studies tend to be focused on trying to determine the degree to which non-monetary variables influence inflation.

The recent empirical work has generally not investigated the impacts of non-monetary determinants of inflation on developing economies. This is peculiar given that much of the early literature on the Structuralist Theory was done on developing countries in Latin America (Fischer, Bernard, and Mayer, 1980; Olivera, Julio H.G, 1964; Wachter, Susan M., 1979). This was because Latin American countries were suffering from chronically high inflation rates and scholars were trying to determine the cause of said inflation. The other school of thought attempting to explain the high inflation in Latin America was known as Monetarism. The Monetarist Theory declared that the high inflation was only due to excessive demand caused by increases in the money supply (Fischer, Bernard, and Mayer, 1980). Thus, the inflation found in Latin American countries was largely due to irresponsible actions on the part of these countries' central banks. On the other hand, the Structuralists studied variables that could be influencing inflation outside of the central bank's power. To be specific, there was a lot of focus on determinants of inflation related to the agricultural sector. Much of this early work found a significant link between these non-monetary or Structuralist variables and the high inflation that characterized these countries' economies. Therefore, not all of the blame for this phenomenon could be put at the feet of central banks.

We now find ourselves in a very different situation wherein we have witnessed a period of great and widespread disinflation and are trying to determine the reasons why this is happening (Schwerhoff, Gregor, and Mouhamadou, 2014). Developing and emerging economies are also a part of this trend (Ha, Jongrim, and Ohnsorge, 2019). Along with disinflation, we have seen a rise in income inequality in the vast majority of countries (Jaumotte, Lall, and Papageorgiou, 2013). The Structuralist Theory may yield important insights into contemporary trends in the same way that it yielded insights during the period of high inflation in Latin America. Therefore, it would certainly be worth studying developing economies to try to determine if Structuralist variables are influencing their inflation rates in this modern era.

As was stated above, much of the early literature focused on non-monetary determinants of inflation, specifically within the agricultural sector in Latin America. However, some of the newer literature on the Structuralist Theory focuses specifically on the labor share and the import price (Taylor, Lance, and Barbosa-Filho, 2021). An application of this kind of empirical framework to developing countries should yield interesting results. Thus, my paper will build on the previous literature by applying these variables to developing countries. This will be a combination of both the old and the new, since I will be studying developing countries like the older empirical literature did, while simultaneously using more modern variables and econometric techniques.

4. Data and Methods

Thirty-seven countries will be used for analysis. These countries are listed as low-income or lower-middle income economies by The World Bank (The World Bank, 2021). The countries chosen for analysis are a subset of this list and were chosen based on the availability of data. The information used for this study ranges from 1990 to 2020. The data is mostly complete, but due to the limited nature of information on developing countries there is some missingness. The degree to which data was available is different for each country and so the years that will be included in the analysis vary accordingly.

Data for the import price and the labor share is taken from the Penn World Table. Inflation data, as well as data for control variables, is taken from the World Bank. A table of descriptive statistics is shown below:

Table 1: Descriptive Statistics

	Inflation	Labor Share*	Import Price	Interest Rate	Broad Money Growth	Unemployment
Mean	25.91%	0.52	0.54	5.89%	31.63%	7.27%
Min	-9.62%	0.23	0.37	-97.52%	-18.65%	0.32%
Max	4734.91%	0.90	0.76	50.98%	4105.57%	37.97%
Sample Size	695	750	750	750	750	750

*Note that values of the labor share closer to one indicate that workers are getting a higher percentage of what they produce back in the form of wages.

The variability of this data is quite striking. The difference between the minimum and maximum on variables like inflation, interest rates, broad money growth and unemployment are all quite large. Additionally, the inflation figures are quite higher than what we see in high income countries. The mean is nearly twenty-six percent, as compared to the U.S. average of two to three percent. The max is nearly five-thousand percent, indicating serious hyperinflation. This number comes from Ukraine in the 1990s. Needless to say, the country was in perilous economic territory at the time. On the other hand, the minimum is around negative ten percent indicating a severe deflationary episode. Deflation, while less talked about than hyperinflation, can also cause a wide array of economic problems. This instability is to be expected since these are developing countries and as such they have less developed institutions to promote and maintain economic stability. The reasons for this are vast and beyond the scope of this paper.

A series of fixed effects models are used to analyze the data. These fixed effects models use within-country variation over time to estimate effects. The primary advantage of fixed effects models is that they sweep out the effects of time invariant unobservables that may be biasing results. However, the model also sweeps out the effects of time-invariant observables. Thus, you cannot control for variables that do not vary over time. For a country fixed effects model, the advantage is that time-invariant, country-specific factors will not bias the results, but the model could still suffer from omitted variable bias if a time-varying country-specific variable is omitted and it is correlated with the key X variables (the labor share and import price) and affects the Y variable (inflation).

The following equations are estimated:

$$\text{Inflation}_{i,t} = \beta^1_{i,t} \text{Labor Share}_{i,t} + \beta^2_{i,t} \text{Import Price}_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (1)$$

$$\text{Inflation}_{i,t} = \beta^1_{i,t} \text{Labor Share}_{i,t} + \beta^2_{i,t} \text{Import Price}_{i,t} + \beta^3_{i,t} \text{Interest Rates}_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (2)$$

$$\text{Inflation}_{i,t} = \beta^1_{i,t} \text{Labor Share}_{i,t} + \beta^2_{i,t} \text{Import Price}_{i,t} + \beta^3_{i,t} \text{Broad Money Growth}_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (3)$$

$$\text{Inflation}_{i,t} = \beta^1_{i,t} \text{Labor Share}_{i,t} + \beta^2_{i,t} \text{Import Price}_{i,t} + \beta^3_{i,t} \text{Unemployment}_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (4)$$

Where i represents an individual country, t equals time, α_i represents the y-intercept for each country (the country fixed effects), and $\varepsilon_{i,t}$ refers to unobserved, time-varying error.

The import price and labor share are, of course, the key variables of interest. Interest rates, broad money growth and unemployment serve as control variables. Each control variable is included in a separate regression, due to the potentiality of collinearity between control variables.

5. Results

Table 2: Regression Results

	Base Model	Model Two	Model Three	Model Four
Constant	457.35 (357.61)	389.77 (247.82)	137.88 (137.15)	463.75 (359.08)
Labor Share	-731.64 (579.63)	-451.91 (361.06)	-239.27 (214.08)	-697.79 (528.56)
Import Price	-51.81 (162.06)	-145.68 (184.53)	-27.07 (77.20)	154.05 (195.16)
Interest Rates		-11.60*** (3.61)		
Broad Money Growth			1.25*** (0.29)	
Unemployment				-19.43 (14.35)
Adjusted R ²	0.05	0.33	0.80	0.03

Notes: ***Indicates significant differences at the 99% level, ** at the 95% level, and * at the 90% level, robust standard errors are in parentheses below the coefficients

We ran three models, the first of which was a base model including only the labor share and import price, the remaining three introduced one control variable at a time. As can be seen from the table, there is no model in which the labor share or import price are found to be statistically significant. The only determinants of inflation found to be statistically significant are interest rates and the broad money supply. A one percent increase in the interest rate is associated with a 11.6 percent decrease in inflation and a one percent increase in the broad money supply is associated with a 1.25 percent increase in inflation.

6. Discussion and Conclusions

The fact that no correlation was found between inflation and the labor share or import price is quite intriguing. This is especially true given the robust links that have been found in the past (Taylor, Lance, and Barbosa-Filho, 2021). However, as has been stated in previous sections, none of the recent studies on the Structuralist Theory were done on developing countries specifically. This discrepancy may suggest that there is something fundamental about developing countries that leads to this lack of correlation. The fact that there was no correlation between inflation and unemployment is also quite intriguing given the fact that this is a widely accepted determinant of inflation. The inverse relationship between these two variables is often demonstrated by the Phillips Curve.

Despite the fact that the import price and the labor share were not statistically significant, all hope for the Structuralist Theory is not lost. There may be other non-monetary variables that do indeed affect inflation in developing countries. However, further research would need to be done to discover these variables.

The results seem to indicate that there is strong evidence for monetary determinants of inflation in developing countries. This is true because the only statistically significant variables were interest rates and broad money growth. Interestingly, the model that included interest rates accounted for thirty-three percent of the variance, while the model that included broad money supply growth accounted for eighty percent of the variance.

The Structuralist Theory of inflation presents inflation as a largely non-monetary phenomenon. Two Structuralist variables that have been studied in recent literature are the import price and the labor share. The labor share is particularly interesting due to the possibility that it could explain the simultaneous trends of decreasing inflation and increasing income inequality seen in past decades. Despite the fact that there is some evidence of a correlation between inflation and these variables in developed countries, when we analyze the relationship in developing countries there appears to be none. This is not to say that the Structuralist Theory does not apply to these countries at all, just that these specific variables appear to be inapplicable. More research would also need to be done to discover what other variables, perhaps Structuralist, that are influencing inflation in these countries.

7. References

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