How Israel avoided hyperinflation. The success of its 1985 stabilization plan in the light of post-Keynesian theory

Sébastien Charles, Jonathan Marie

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Authors

Sébastien CHARLES, LED, Université Paris 8, Saint-Denis, France

Jonathan MARIE, CEPN, Université Paris 13, Villetaneuse, France. jonathan.marie@univ-paris13.fr

Abstract

This article uses a post-Keynesian framework to analyse the inflationary process at work from 1948 until the 1980s in an attempt to understand the origins of the near-hyperinflation of the first semester 1985 and the success of the stabilization plan introduced that same summer.

In 1985 the shekel seems to have been entirely abandoned by its users for the U.S. dollar, which, in the context of high inflation of the time should have caused hyperinflation. Such an outcome results from the conjunction of several factors: the historic virulence of the distribution conflict, the presence of indexation mechanisms, and the fragility of the balance of payments marked by a structural current deficit. The stabilization plan, supported by substantial U.S. financial aid, immediately attenuated the external financing constraint and lastingly eased the distribution conflict, thereby averting the hyperinflationary risks. Analysis of this historical trajectory confirms the theoretical coherence of the post-Keynesian analysis of hyperinflation.

KEYWORDS : Israel; hyperinflation; post-Keynesian analysis

JEL CODES : E12; E31; N15

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Introduction

This contribution seeks to meet a twofold objective. First, a theoretical objective: the purpose is to mobilize and possibly supplement or amend a post-Keynesian analytical framework designed to make intelligible a specific type of monetary crisis, namely episodes of hyperinflation or near-hyperinflation. The second objective is to set this theoretical framework against Israel's inflationary trajectory from the birth of the State in 1948 until the mid-1980s when the country's economy was verging on hyperinflation. The changes in the Israeli economy resemble in many ways those of developing economies which experienced similar monetary crises in the 1980s. Numerous similarities can be spotted between the macroeconomic trajectories of Israel and of Argentina in the 1980s.[1] Argentinian hyperinflation has been examined previously (Marie, 2014) prompting us to mobilize anew the conceptual framework discussed at the time for an analysis of the Israeli economy. While this episode was examined in the late 1980s in a new-Keynesian theoretical framework, as far as we know there has been no analysis of this trajectory purporting to take a post-Keynesian approach.

To express the ambition of this contribution differently, the aim here is to study the Israeli economy which seemed to be teetering on the brink before tumbling inevitably into hyperinflation in 1985 (the annual rate of inflation in 1984 was estimated to be 445 per cent and it further accelerated in the first six months of 1985). Yet Israel managed to escape this particular type of monetary crisis through the introduction of an effective monetary reform. Investigating how that was made possible should refine our theoretical understanding of hyperinflationary phenomena and enlighten us as to how to avert them. To achieve this goal, we develop an analysis of a specific macroeconomic trajectory embedded in and influenced by a global historical context that has to be taken into account. (Over the period, the Bretton Woods international monetary system collapsed and the world economy experienced two oil shocks. These events had huge repercussions on the Israeli economy, as will be seen). However, we also emphasize certain institutional, social, or political specificities of Israel that can best be understood by analysis in terms of a distributional conflict. Our approach, grounded in post-Keynesian macroeconomic analysis, can be characterized as a historical political economy analysis and is clearly open to cross-disciplinary influences. Accordingly, our post-Keynesian framework allows us to incorporate multidisciplinary topics: our macroeconomic analysis is fed by changes in political and economic ideas and by national and international power

[1] These similarities include the pattern of the distribution conflict, the presence of indexation mechanisms (wages but also certain prices and assets were pegged to the foreign exchange rate, underscoring the importance taken by a foreign currency for domestic behaviour), or balance-of-payments characteristics.

relations. Moreover, current macroeconomic analysis usually suffers from an insufficient focus on such matters, whereas, as recognized by Blyth and Matthijs (2017), International Political Economy (IPE) analysis should reinforce the study of "macro-effects". In some sense, our contribution is also an attempt to fill such a gap.

The paper is organized as follows: section 1 presents the generic theoretical framework and justification for our definition of hyperinflation as a flight out of domestic currency and into a foreign currency. Therefore it cannot be identified by any single quantitative measure of inflation. Section 2 describes the characteristics and the development of the Israeli economy from the 1950s to the late 1970s, identifying two stages in the trend towards higher inflation before the second oil shock; a first stage of moderate inflation over the period 1948–1971 and a second stage over the period 1972–1978 during which inflation rose and domestic agents changed their behaviour.

Section 3 focuses on the first half of the 1980s when the inflationary dynamic raised fears of hyperinflation. Section 4 sets out the stabilization plan and looks into what made it a success.

1. The post-Keynesian interpretation of hyperinflation: distribution conflict, indexation, and flight from the domestic currency

The definition of hyperinflation we use here goes beyond the traditional quantitative view of Cagan (1956) and provides an understanding of its origins. Our theoretical framework is the same as the one developed by Charles and Marie (2016) and used to analyse Bulgarian hyperinflation in 1997 (see Charles and Marie, 2017). It is part of a twofold tradition. First, it encompasses the role of the balance-of-payments dynamic, which was at the heart of the analysis of German hyperinflation of 1923 proposed by Karl Helfferich (*cf.* Câmara and Vernengo, 2001). There, the outflow of domestic capital caused by wartime reparations or the servicing of loans due to substantial foreign debt constrained foreign exchange causing external depreciation of the domestic currency and fuelling inflation. Second, post-Keynesian theory relies on the distribution conflict and its development to explain inflationary dynamics. This connection between the distribution conflict and inflation was highlighted by Aujac (1950) and Kalecki (1954). Inflation is the outcome of conflicting interests among social groups seeking to gain a bigger share of national income and causing price rises. Although, as we suggest, hyperinflation is different in its nature from inflation, it nonetheless develops in a context of high inflation.

1.1. The distribution conflict as a driver of inflation

Within post-Keynesian theory, inflation reflects the existence of a distribution conflict and is generated in a given institutional and historical context. Along lines first developed by Rowthorn (1977), post-Keynesian authors have sought to develop models to explain inflation. The general price level is determined by costs, which are borne by capitalists. The principal determinant of these costs is the cost of wages. Firms apply a mark-up to this cost in order to determine prices (Weintraub, 1978). A price variation occurs if the mark-up varies, if labour productivity changes, or if the nominal wage varies. This is how the distribution conflict intervenes in the inflationary process: everyone tries to secure the most favourable distribution of income for themselves. Wage labourers by securing higher wages capitalists by increasing their profits via price rises. A group's ability to achieve its objective depends on its bargaining power. Wage labourers may enjoy substantial bargaining power, among other examples, if unemployment in the economy in question is low (Rowthorn, 1977), if unemployment is falling (Casetti, 2003), depending on the type of union organizations (Susjan and Lah, 1997), or the institutional framework (Setterfield, 2007). Capitalists' market power is positively affected by the existence of oligopolistic markets or by the rate of use of capital (if they are in a situation where capital is under-used, firms tend to increase output rather than prices further to a rise in demand).[2] In Rowthorn's founding model, workers negotiate a nominal wage for the following period. Then firms fix prices, seeking to achieve the price level compatible with the desired mark-up. The rate of inflation is then the consequence of divergences between the objectives of firms (the mark-up aimed for) and of workers (the real wage sought). In the final resort, firms fix prices. They increase them when the actual mark-up is less than the desired mark-up. Thus, a mark-up target can be analysed as a real wage target. In other words, in order to increase the mark-up if productivity is constant, firms must successfully reduce real wages. Finally, as synthetized by Lavoie (2014, p. 542), "Most post-Keynesians view inflation as a conflict over the distribution of income".

While the remuneration of labour is an important factor for firms' costs, there are others. And when these costs vary, mark-ups are affected. Entrepreneurs may therefore attempt to pass on an increase in their non-wage costs to the real remuneration of workers. In other words, cost-push forces can lead to higher prices without any change either in the workers' target wage or in workers' bargaining power. The impact of a variation in interest rates on the process of

[2] Demand-pull inflation can be integrated into this framework: growth in demand (induced by an expansionist fiscal policy, for example) can raise the rate of utilization and reduce unemployment. Consequently, the simultaneous increases in workers' bargaining power and firms' market power will lead to higher inflation.

negotiation of wages and prices was emphasized by Galbraith (1957). If interest rates rise, firms will seek to pass on this rise in their financial costs via a price rise. The reasoning is valid, of course, if we consider changes in the prices of firms' inputs or changes in the foreign exchange rate of the domestic currency. So exchange rate pass-through is explained as follows (see, for example, Arestis and Milberg, 1994): depreciation of the domestic currency will affect firms' profitability because imported inputs (or investment goods), the prices of which are in foreign currencies, come at a price expressed in the domestic currency, which is rising. Firms will then seek to counter this trend by raising prices. Thus, modelling or understanding inflation within a post-Keynesian framework requires us to study the distribution conflict, and any changes in firms' costs need to be interpreted.

1.2. Indexation mechanisms develop in a high-inflation regime

An economy's inflation rates may be lastingly high. This kind of situation was to be observed, for example, in developed countries in the 1970s but also and above all in many Latin American countries until the late 1980s. Since the 1960s several authors, following a path first taken by Pazos (1963, 1977) and Simonsen (1970), have identified indexation as generating inertia in inflation and even as a possible cause of increased inflation. As recently recalled by Vera (2013, p. 261): "inflation erodes real values and misaligns relative prices, agents are required to reset wages and renegotiate contracts by creating rules that reconstitute the claims of peak real incomes periodically. When inflation rises to two- or three-digit levels, market transactions and contracts become disrupted and it may happen that contracts start to index wages to inflation. The prevalence of formal or informal wage indexation has been pointed out as one of the reasons why inflation in some countries shows a stronger tendency to conserve momentum. […] There are situations, however, in which higher inflation in the past leads to higher wage settlements, which in turn raise inflation. […] Thus, as inflation accelerates, contracts shorten, and that shortening of contract is itself a factor that causes inflation to accelerate."

During the 1970s and 1980s, neo-structuralist authors were to take a particular interest in the institutional mechanisms that increase or maintain an inflationary trajectory (see for example Frenkel, 1986 or Bresser-Pereira and Nakano, 1987). These authors explain that agents' behaviour will change when they come to understand that inflation may vary suddenly, when it is habitually high, or when it tends to strengthen. It is essential to include this factor in our thinking. Among others, Frenkel (1979) underlines the importance of indexation in high inflation regimes. He explains that if inflation is high and volatile over several periods, agents

will seek to develop indexation mechanisms to protect their real incomes against the effects caused by a possible acceleration of inflation. This institutional mechanism naturally maintains inflation, but it may also accelerate it (see also Taylor, 2004). Indexation of wages on prices adds to the distribution conflict, making it difficult for a stable and low inflationary compromise to emerge over the share-out of value added.

It is important to understand that when financial assets are index-linked to the foreign exchange rate, the nature of the inflation process changes. This is a perfectly understandable effect: high levels of inflation can destroy the store of value function of domestic currency pushing domestic agents to look for substitutes, such as financial assets expressed in a foreign currency. So, domestic financial institutions can provide indexation mechanisms on domestic assets to domestic savers to maintain their financial wealth in real terms. This type of indexation should not be confused with the indexation of wages on prices. The former aims at protecting savings, whereas the latter aims at stabilizing the functional distribution of income (distribution between wage earners and capital earners). Such indexation on the foreign exchange rate can be extended to all type of contracts within the economy. Following Carvalho (1993, p. 67), we can state: "a high inflation régime emerges when new rules of contracting are developed. The main feature of a high inflation régime is the creation of a widespread system of contracts denominated in a unit of account that will establish, less equivocally than the domestic money of account (subject to inflation) a constant real value for the obligations they stipulate in the contracts." Here, the unit of account becomes the foreign currency. In return, such a tendency will propagate the exchange rate movements to domestic contracts. Moreover, if "the system receives a shock, which may be, for instance, a supply shock such as the oil prices rises of the 1970s, or expectational shocks (when agents, for some reason, expect some acceleration of inflation), it can degenerate into a hyperinflation" (Carvalho, 1991, p. 76). This causal sequence is fully consistent with the sequence presented in section 1.

As Carvalho acknowledges, indexation creates its own vulnerabilities, notably in propagating bursts of inflation. We can identify the generalization of indexation mechanisms as the defining feature of a high-inflation regime. Such a regime is not defined by a quantitative criterion as Cagan proposed. Defining hyperinflation requires a similar analytical proposal. As explained in the next section, hyperinflation is more than just very high inflation; when hyperinflation occurs, it reveals the complete destruction of the former money-of-account and thus the disappearance of the indexation mechanisms built on it.

1.3. Hyperinflation: the flight from the domestic currency as the final step in the sequence of causes

Following Kalecki (1962, p. 275) describing a closed economy, two features of hyperinflation have to be borne in mind: a very rapid rise in prices, of course, but also a "general tendency to convert money into goods". This latter characteristic is really important: hyperinflation is a flight from money. Although the analytical model developed by Kalecki in that seminal paper is paradoxically similar to models developed by monetarist authors (e.g. Cagan) because the acceleration of prices is brought about by the expected inflation rate, Kalecki emphasizes the rejection of the domestic money-of-account as a decisive characteristic of hyperinflation. This is a necessary characteristic for a post-Keynesian and qualitative definition of hyperinflation. It should also be noted that Kalecki identifies other significant characteristics of hyperinflationary episodes. They go hand-in-hand with situations of shortages in the supply of goods, impoverishment of rentiers, and reductions in real wages, which, although they may benefit from inflation-indexing mechanisms, are penalized by the existence of adjustment lags. This means that only the profits of entrepreneurs, and above all those made by big business, thrive. Kalecki's contribution is important in two ways. It highlights a qualitative aspect of hyperinflation: people get rid of means of payment as quickly as possible because they expect inflation to continue rising. But his contribution also emphasizes the consequences for distribution.

If this proposition is put together with that of Robinson (1951), the construction of the post-Keynesian view of hyperinflation can be completed. Robinson looks into the sequence of events leading to German hyperinflation in the early 1920s.[3] Unlike Kalecki, she considers an open economy. She highlights the following sequence of events: inflation is initially high, caused by a virulent distribution conflict. Domestic inflation causes a downturn in the balance of trade. This downturn brings about a decline in the direct exchange rate of domestic money, which raises the price of imported goods expressed in domestic currency. The German economy at the time faced crippling foreign currency debt (as a consequence of the Treaty of Versailles). This mechanism feeds new price rises (firms want to maintain their mark-ups) and wage rises (workers want to maintain their real level of remuneration). For Robinson, although the collapse of foreign exchange plays a decisive part in hyperinflation (which is also the analysis advanced by the proponents of the German Balance of Payments School, whose best-known

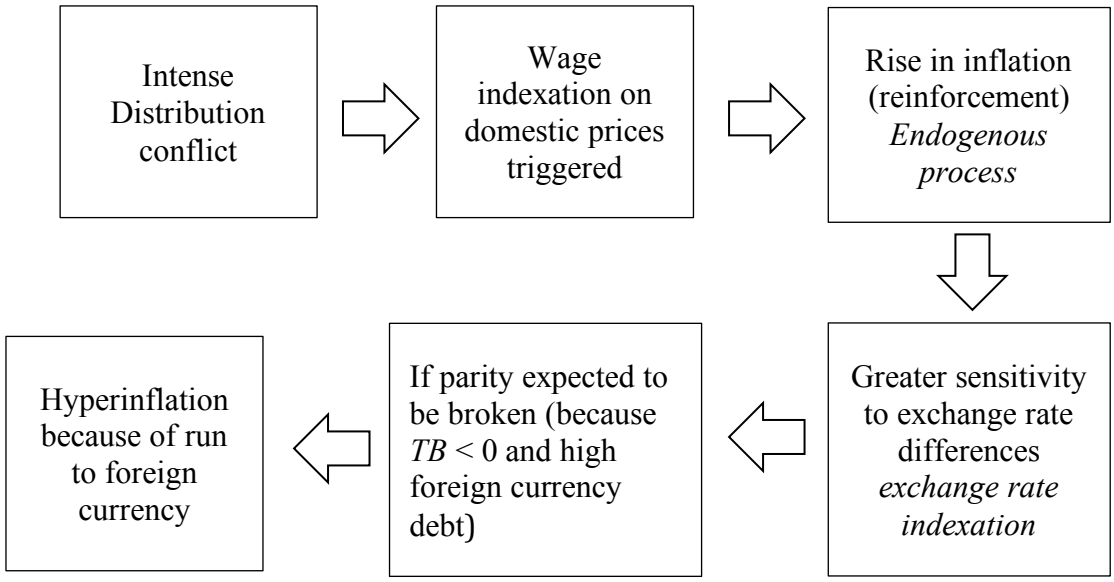
[3] The article was first published as a shorter version in 1938. It was a critique of *The Economics of Inflation* by Bresciani-Turroni (1968, first English edition 1931). That book analysed German hyperinflation in a thoroughly monetarist view, an interpretation that Robinson eschewed.

representative is Helfferich),[4] the change in wage levels is also a fundamental factor.

Our view of hyperinflation therefore takes the following form: hyperinflation is a phenomenon that is first[5] caused by a violent distribution conflict. This conflict favours the adoption of indexation mechanisms, in a first step of wages on domestic prices and in a second step of other contracts on foreign exchange. Inflation is incompatible with external equilibria and the external depreciation of money feeds back into the price-wage loop. This is the sequence Robinson describes. If we add in the role played by expectation, which Kalecki emphasizes, hyperinflation occurs when agents, anticipating the break-off in foreign exchange, turn away from the domestic currency and towards some substitute: foreign currency. This triggers a self-fulfilling phenomenon that entails the break-off of foreign exchange and any coherence provided by prices in domestic currency. This analysis is consistent with work proposed by neo-structuralists on the high inflation rates observed in Latin America in the 1980s. It also corroborates the remark made by Kaldor (1982) about the German situation in 1923: if foreign exchange remains stable during the day, prices and wages do too. Ultimately hyperinflation is defined qualitatively: it is the phenomenon in a highly inflationary economy that attests to the generalized rejection of domestic currency in favour of a foreign currency. In other words, the exchange-rate crisis triggers hyperinflation and the external constraint is a key factor. Finally, our generic sequence can be depicted like this:

[4] Analysing German hyperinflation in the 1920s, Helfferich "argued that the permanent unfavorable trade balance, caused by the war and the impositions of Versailles, led to depreciation. This was the root of German problems". See Câmara and Vernengo (2001) or Vernengo (2006).

[5] Here, *first* only refers to a causal sequence; it does not mean that the distributive conflict is preponderant over indexation or external constraint in inducing hyperinflation; but inflation arises first, leading on to indexation. Here, we look to stress the historical role of the distributive conflict in the development of indexation mechanisms. So, in a high-inflation regime, both external shocks and balance of payments dynamics play a key role in bringing about hyperinflation. Alternatively, Structuralist authors, in modelling high-inflation regimes, consider that the distributive conflict may be "relegated to a secondary plan" (see Vernengo, 2003). They focus on the leading role of indexation and external shocks and may fail to explore what causes indexation.



N.B.: *TB* is the acronym for Trade Balance

The causal sequence is built on the driving role played by the distribution conflict in inflation, the importance of indexation, and the importance of the foreign exchange rate in hyperinflation. We can take away from these considerations that, in the absence of any external debt in foreign currency, in the absence of price- and wage-indexing mechanisms, and in the absence of any distribution conflict, the terms of which may trigger high inflation, there is no cause to fear the emergence of a hyperinflationary phenomenon.

This generic sequence is open to amendment. Reference may be made to Charles and Marie (2017) for an adaptation to the case of Bulgaria, a transitional economy that experienced hyperinflation in 1997. This point enables us to reaffirm the purpose of this contribution: we are looking to analyse a trajectory that led Israel to the verge of hyperinflation in 1985 and we do so by mobilizing the post-Keynesian analytical framework; this framework of analysis can in turn be amended, modified, or enhanced so as to include the observations made of the Israeli case.

2. From the creation of the State of Israel to the late 1970s: from moderate inflation to indexation on the foreign exchange rate

2.1. From 1948 to the late 1960s: moderate inflation

Israel is a comparatively small country. In 1985 its population was estimated at 4 million inhabitants. The Israeli economy exhibits several peculiarities: natural resources are rare (for example Israel has no oil reserves); it is small in area (not counting the occupied territories, Israel covers some 21,000 km^2, which, by way of comparison, makes it 30 per cent smaller than Albania); its workforce is well-trained and well-educated while its economy is reliant on immigration. Moreover, Israel's economic history is obviously recent since the State of Israel was created on 14 May 1948 (further to a United Nations resolution of 29 November 1947 in favour of the partitioning of Palestine). Although it was able to draw on institutions established in the inter-war years during the British protectorate of Palestine, the Israeli economy and its institutions still needed either to be further developed or to be founded. First, the new state had to set up its fiscal and monetary administrations in a peculiar geopolitical context since the country's very existence was challenged militarily by the neighbouring Arab countries; the first Israeli–Arab war began upon its declaration of independence. This war, like the partition of Palestine further to independence, meant there was discontinuity in the productive, economic, and social organization.

From the outset, and with a degree of continuity with the period of British governance, there was substantial economic interventionism materialized by price controls, strict supervision of foreign exchange operations, and the introduction of rationing of consumer goods. It seems that a near-general adherence by Israeli elites and political decision-makers to the idea that economic development requires planning and interventionism is observed (see Gross, 1990, p. 69 or Klein, 2005, p. 3). This adherence can be explained by at least two factors: first the establishment of a war economy requiring that foreign currency mainly from transfers from the diaspora and aid from foreign governments could be mobilized to import military hardware in an overall context of shortage of U.S. dollars; next by the compatibility of the objectives of the Zionist movements with the exercise of full sovereignty by the state in the economic realm. To this it can be added that the existence of the trade union organization, the Histadrut, which was created in Haifa in the 1920s and was particularly powerful with Israeli workers, underpinned the creation of a social-democratic economic model with comparatively significant economic interventionism from the foundation of the State of Israel and that was to remain so thereafter. Mechanisms were in force as early as the 1940s to index wages on changes in the cost of living;[6] these mechanisms were only to be dismantled in the late 1980s. This factor is primordial with reference to our generic sequence.

[6] "The earliest venue for indexation was the labour market, where a wide variety of COLA arrangements have been adopted starting as early as 1939. The details of these arrangements changed frequently and included various

After the Israeli-Arab agreements of 1949 there came a structural modification of the economy which is no longer orientated solely on the war effort (military spending was probably in the order of 40 per cent GDP in 1949). From the estimates presented by Gross (1990, p. 72), although output for 1948 was close to the level of the previous year, growth rates were very high in the following years: 70–80 per cent in 1949, and then 25–35 per cent in 1950 and 1951. These growth rates were pulled by extremely high levels of investment and booming consumer demand, which in turn was caused by immigration: the population rose from 579,000 inhabitants in 1949 to 1,494,000 in 1951. Even so, production did not rise enough to avoid shortages and large rises in the cost of living. These fed into a price–wage loop: to keep inflation down, price controls were strengthened (some prices even fell in 1949) and the idea of promoting Israeli international competitiveness became an objective for the authorities. The aim was both to develop and diversify exports and also to replace imports with domestic output.

External constraints were strong. In August 1948 the Israeli pound or lira replaced the Palestinian pound as the domestic currency. Its exchange rate was fixed against the pound sterling at £1 sterling for £3 Israeli. This initial exchange rate was judged incoherent by Gross (1990) and the fixed anchor point was to generate or intensify a real overvaluation of the domestic currency. The balance of trade was largely in deficit: by the estimates of Halevi and Klinov-Maluv (1968), imports for 1951 came to $426 million for just $67 million in exports. Naturally, balance-of-payments constraints were inescapable for the Israeli authorities. They justified the introduction in 1951 of a system of multiple foreign exchange rates and continuing restrictions on foreign exchange operations which were meant to replace rationing. This policy prompted the development of a parallel market for foreign exchange; in February 1952 the estimated gap between the official exchange rate and the rate on the parallel market was 678 per cent according to Ilzetzki *et al.* (2017, p. 61).

The Bank of Israel (B.O.I.) was established in August 1954 and given the statutory duty of limiting inflation (see Cukierman and Melnick, 2015). In point of fact, the government was to rely on the bank for its strategy of industrialization by replacing imports by the provision of

degrees of indexation, different types of floors and ceilings on all types of wage parameters, discretionary suspensions during attempted stabilisations and the like. Two features of these arrangements are worth noting: First, formal, broad-based COLA arrangements have never involved linkage to the foreign exchange even though denomination of wages in foreign currency is not uncommon and even prevalent in some occupations. Second, broad COLA arrangements generally did not provide full compensation for inflationary erosion of wages. It has been suggested that the labour unions avoided 100% wage indexation in order to enhance their *raison d'être*." Offenbacher and Stein (2003, p. 284). Prager (1986, p. 260) explains the British mandatory government in Palestine "promoted wage increments to ensure labor tranquility and uninterrupted production" during the World War Two. Moreover, "linking wages was a feature of the 1942 national labor agreement […] and has been characteristic of the Israeli scene since."

low-interest loans to what were deemed strategic sectors; this development strategy was similar to the one adopted by several non-petroleum-producing Latin American countries (see for example He, 2018, p. 183). Offenbacher and Stein (2003) use the expression "financial repression" for the authorities' control over domestic financial intermediation and the constraints on international financial transactions. In this context, the macroeconomic results were undeniably positive:

Table 1: Macroeconomic data 1954–1972

Periods	GDP growth rate	Unemployment rate	Inflation rate
1954–1959	11.8	6.8	5.4
1960–1972	9.2	4.7	6.9

After Klein (2005, p. 5). GDP growth rate is the estimated mean annual rate of growth for the period, the unemployment rate is the mean rate observed over the period, and the inflation rate is the mean annual inflation rate.

The period of the "Israeli economic miracle" (visible here from the high growth rates, low unemployment rate, and rising but still moderate inflation) ended in the early 1970s. The figures in the table should not conceal certain aspects of this economy. First the current balance was systematically negative, causing growing net foreign debt. This structural aspect combined with rising inflation justified the adoption of economic measures in 1962: the Israeli lira was devalued against the U.S. dollar by 67 per cent while the government secured an agreement with the Histadrut stipulating that real wages would be frozen for two years.[7] This measure was designed, of course, to limit inflationary pressures and attested to the need to limit by this agreement the bargaining power of workers. The late 1960s were also marked by the Six Days War between Israel and Egypt from 5 to 10 June 1967. This war went with increased military spending. The defence outlay in terms of GNP was around 9 per cent over the period 1964–1966 and reached 23 per cent in 1970.

[7] See Schiffmann *et al.* (2017, p. 71). The temporary nominal wage freeze did not prevent the increase in real wages over the whole period as a consequence of the Histadrut's bargaining power. According to Prager, between 1960 and 1973, real wages rose by 120% while productivity rose by 97%.

Table 2: Military spending

	% Defence Outlays in GNP	% Defence Imports in Trade Deficit
1964–1966	9	23.6
1967	16	53.7
1968–1969	17	36.4
1970	23	48.7
1971–1972	19	77.1
1973–1975	27	56.6
1976–1979	21	74.7
1978	27	89.0
1979	21	42.4
1980	24	72.4
1981	26	95.4
1982	20	55.3
1983	17.3	31.9
1984	20	66.3
1985	18.4	111.0

Sources: Bank of Israel annual reports, various issues (1981–1988), own calculations. Due to lack of data annual reports do not provide annual data for all years from 1964 to 1976.

Table 2 reveals that military spending was historically high in Israel but it increased in terms of GNP from the late 1960s to mid-1970s. Despite a slight dip, military expenditure remained high in the 1980s. Moreover, although a sizeable military-industrial sector grew in Israel over the period, defence imports aggravated the trade deficit in the early 1970s and remained one of its major causes thereafter. As shall be seen later, the size of these military imports clearly intensified the constraints on the inflationary process in Israel.

2.2. The 1970s: downturn in macroeconomic performances, higher inflation, and indexation of liquid financial assets on the foreign exchange rate

The early 1970s saw a sudden and radical change in the international monetary system. The end of the Bretton Woods agreements was triggered by U.S. President Nixon's announcement in August 1971 that foreign convertibility of the dollar into gold was being suspended. Since the pervious year (see Ilzetzki *et al.*, 2017) the Israeli lira had been pegged no longer to the pound sterling but to the U.S. dollar. Upon the announcement of the end of dollar convertibility, there was instability on foreign exchange markets of a kind unknown since the inter-war years in the international monetary system. This is not just an anecdotal comment for our purpose: it can be observed that no episode of hyperinflation had been seen during the

Bretton Woods era whereas several had been observed in the 1920s, at the heart of another historical period of global instability of foreign exchange; we take this to be evidence that hyperinflation can only develop in conjunction with a foreign exchange crisis.

Domestically, too, an important event occurred at the beginning of this period. The Yom Kippur war was fought from 6 to 24 October 1973 between Israel and a coalition of Arab countries comprising the Egyptian, Syrian, and Jordanian armies.[8] The United States provided logistic (through delivery of weapons) and diplomatic support to Israel in the conflict; in reaction to this support, the Arab countries of OPEC coordinated a reduction in petroleum production and a rise in prices at a meeting of the organization on 16 and 17 October 1973. This event puts a date on the first oil crisis. The ceasefire came further to a United Nations resolution of 22 October of that same year. Its geopolitical aspects aside, the Yom Kippur War was to have significant purely economic consequences that influenced the trajectory we are seeking to understand in this paper. As Israel was an oil-importing country, the rise in the price of the barrel was to hit its foreign trade balance. Moreover, the Yom Kippur War was to raise military spending even higher to 29 per cent of Israel's GDP over the period 1974–1977 (see for example Fischer, 1985, p. 58). While many countries experienced "stagflation" as a result of the 1973 oil crisis, the rising inflation observed in the Israeli economy was particularly high and concomitant with a very large imbalance in its foreign trade.

Those events induced new constraints and brought about changes in the macroeconomic policy adopted by Israel. The changes are observed on the monetary policy side: the exchange rate policy adopted by the central bank evolved. As we will describe in this section, the monetary authorities turned progressively from the existing fixed exchange rate system to a floating exchange rate system by the end of the decade (see Bruno and Sussman, 1979, for a detailed description of this shift). Fiscal policy was to become less accommodating after a devaluation in 1974 and can only be characterized as restrictive after the second oil shock in 1979 (see next section).

Table 3 reveals a clear trend over the period for the GDP growth rate to fall and the concomitant rise in inflation rates. The unemployment rate remained low.

[8] Egypt and Syria made two coordinated attacks on 6 October 1973 against the Israeli army to take back control of the Sinai Peninsula (Egypt's objective) and the Golan Heights (Syria's objective), which Israel had controlled since the Six Day War of 1967.

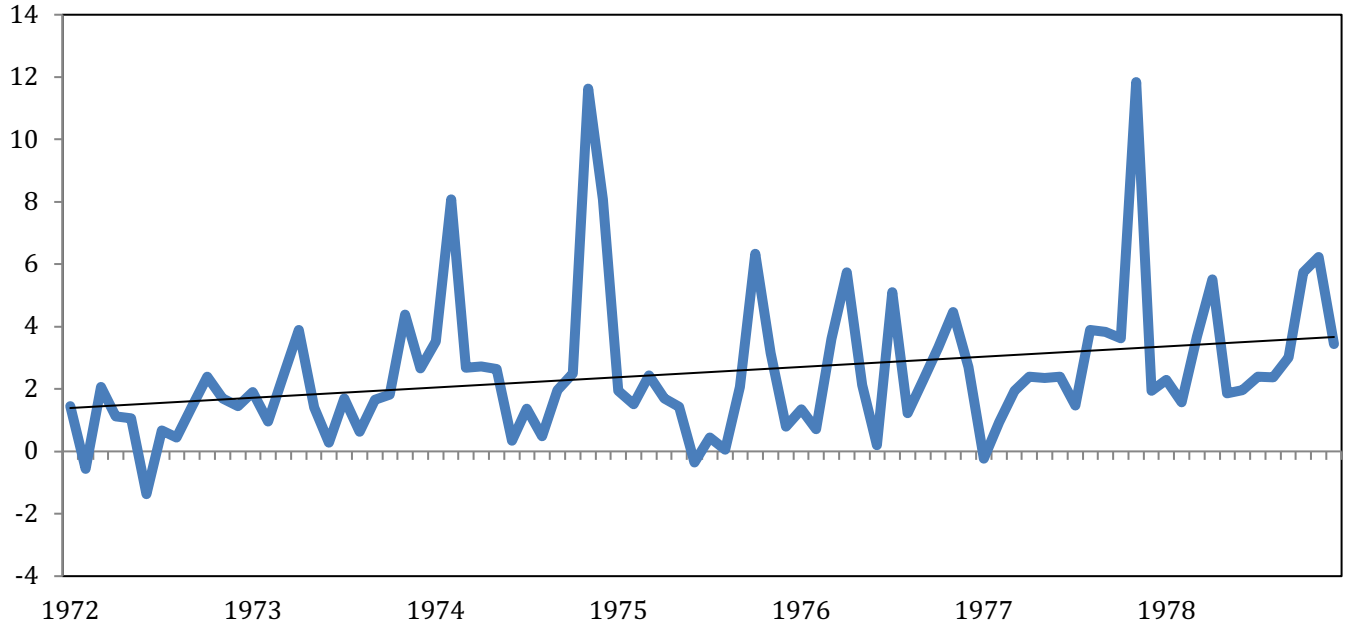
Table 3: Macroeconomic Data 1972-1979

	GDP growth rate	Unemployment rate	Inflation rate	Real wages
1972	10.3	2.7	12.4	
1973	5	2.6	26.4	6.1
1974	4.6	3	56.2	-2.4
1975	3.8	3.1	23.5	-1.9
1976	1.5	3.6	38.0	1.4
1977	1.3	3.9	42.6	10.6
1978	3.7	3.6	48.1	1.5
1979	5	2.9	111.4	8.5

Sources: *Bank of Israel Annual Report,* various years for GDP Growth rates and Unemployment rates (1977 for 1972–1976, 1982 for 1977–1979), *Central Bureau of Statistics* (Israel), data extracted in September 2017. Series used: Consumer Price Index (CPI). For Real Wages: own estimations based on nominal wages given by Bank of Israel, deflated by CPI.

Graph 1 shows the steady upward trend in inflation over the period.

Graph 1: Monthly inflation rates, 1972–1978



Source: *Central Bureau of Statistics* (Israel), data extracted in September 2017. Series used: Consumer Price Index, with straight-line trend added.
Note: The tendency for inflation to rise over the period is also found when using annual inflation rates (same source): see table 3.

The change in the pace of inflation detailed by Graph 1 can be explained by the modification in the terms of the distribution conflict. The market power of firms and the bargaining power of workers – the income targets of capitalists on one side and workers on the other – changed. Table 3 shows that annual inflation exceeded 10 per cent in the 1970s, before the events referred to above. This quickening in inflation came about when the unemployment rate was falling, until full-employment was observed in 1971 in a context of a labour shortage in many sectors (especially for the highest-skilled jobs) and the ensuing strains (see for example *B.O.I. Annual Report*, 1971, p. 3 and p. 177). The expansion of administrative services was not unrelated to this fall in unemployment: the rate of growth of total employment was 18.44 per cent over the period 1966–1971 while that in the public services was 26.23 per cent (in 1971, this category accounted for 23.57 per cent of total employment).[9]

Logically, according to the explanation of inflation by the distribution conflict, a fall in unemployment tends to encourage workers to ask for and obtain nominal pay rises which then tend to force up inflation through the reaction of firms (prices being established by the holders of capital). It might be expected that the situation described would lead to a rise in real wages and an increase in the share of wages in the economy. Yet this is not what was observed. As stated in chapter 10 of the *B.O.I. Annual Report* (1971), although the rates of growth of nominal wages rose, real wages fell slightly because of an ever greater acceleration of inflation. In this way, the share of wages in the economy began to decline until 1975 (gross wages represented 38.5 per cent of GDP in 1966 but only 32 per cent in 1975 according to Nitzan and Bichler, 2000, p. 292).

The indications are, then, that the market power of firms also strengthened from the late 1960s. The greater market power of firms was fully consistent with the analysis by Nitzan and Bichler (2000). They estimated that although the Israeli economy of the early decades was characterized by the predominance of comparatively small firms, this changed in the late 1960s. Larger firms developed and benefitted from markets with oligopolistic and non-competitive structures. Those authors emphasized the part played by the arms sector; the militarization of the Israeli economy played a part in price dynamics and the finance sector. Growth rates in both these sectors were well above average.

In other words, the acceleration of inflation went along with an increase in the market power of the largest firms which managed to raise the real profit per employee despite an increase in the growth of nominal wages. The distribution gains achieved were for the benefit

[9] These statistics are from Bruno (1989).

of those big firms and were accompanied by higher inflation. Lastly those authors noted different accumulation rates by type of firm: the firms enjoying the most advantageous situations were those with the highest rates of accumulation.

The year 1973 was a pivotal one: inflation which stood at 26.4 per cent in 1973 rose to 56.2 per cent in 1974 while the current account deficit was multiplied nine-fold between 1972 and 1975 (from $216 million to $1,975 million; the statistics are in the appendix). This rise was a consequence of the increase in oil prices (Fischer, 1985, p. 59, evaluates the impact of the oil price rise on the Israeli economy at 3 per cent of GDP) and the increase in military imports. Firms passed on the rise in energy costs in prices while the indexation of wages sustained the rise. For sure, indexation of wages encourages fresh price increases and can produce inertial inflation: after the increase in energy costs, wages increased as a result of indexation mechanisms, thereby inducing a further increase in costs borne by firms. But it should be pointed out that there is no perfect indexation of wages on prices; in 1974 and 1975 real wages fell (see Table 3). In other words, even with a highly developed and advanced institutional indexation scheme, real wages can fluctuate. This is the consequence of the frequency of adjustments on the one hand. Prices can change continuously whereas wages are indexed "only at discrete points in time" (see Taylor, 1983, p. 114). So, between each adjustment, real wages vary. On the other hand, perfect indexation seems impossible to achieve in practice: price indexes used in indexation are inherently arbitrary. "Until the mid-1970s, the Israeli system of indexation officially provided a 100% linkage [of prices on wages]. In fact, however, linkage was never total. The existence of a threshold rate of inflation to warrant index payments, a ceiling on linkage payments, the exclusion of various components of the CPI for computing the inflation rate, and even, on occasion, the willingness of the Histadrut to waive the Cost Of Living Adjustment (COLA), meant that in very few years did the COLA rise as much as the CPI. While estimates differ as to the degree of coverage, the general pattern is one of reasonable protection during the 1950s and 1960s, and relatively greater erosion during the accelerating inflation in the 1970s" (Prager, 1986, p. 266). In 1975 a Committee including the Minister of Finance, the President of the Manufacturers' Association, and the Secretary-General of the Histadrut introduced a major reform of the COLA mechanism. Indexation was from then on applied to wages at regular intervals, every six months, only if the Consumer Price Index had risen by 5 per cent or more during the previous six months; the allowance would be 70 per cent

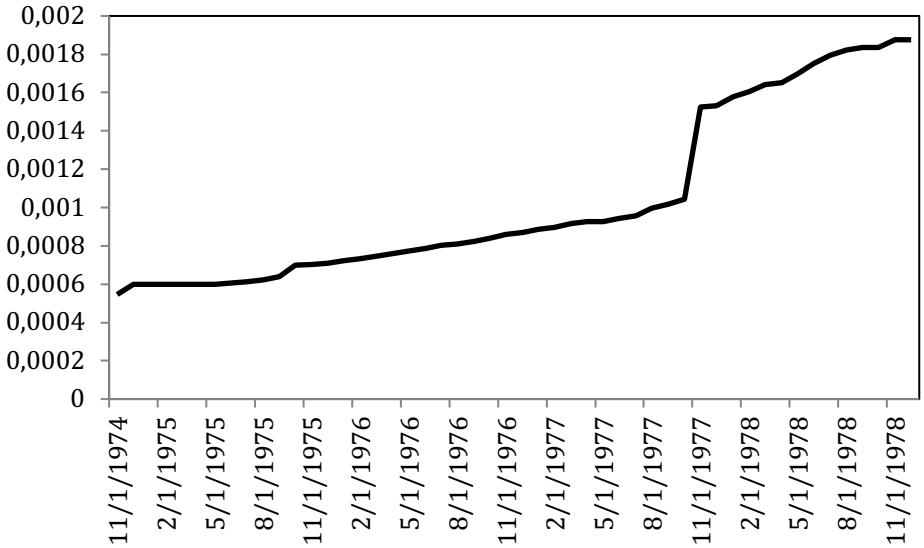
of the change in the cost-of-living (it was a measure justified to avoid imported inflation being fully offset).[10]

Although the effects of the oil shock seemed to dwindle in 1975 (the annual rate of inflation slackened), there were considerable consequences for the trade balance. The worsening of the current deficit required a change to the foreign exchange policy. While the official exchange rate of the lira to the dollar had not varied since September 1971, a 30 per cent devaluation was put in place in November 1974.[11] Subsequently, a crawling peg was introduced in June 1975. This was to steady the nominal devaluation of the lira against the dollar so as to make it easier to maintain the foreign competitiveness of the economy (*cf.* Graph 2). But these measures had an inflationary effect by way of the pass-through effect. The cost of imported goods rose thereby fuelling inflation.

[10] For details, see Dror (1986). It may seem paradoxical that the Histadrut agreed with partial instead of full indexation. Prager (1986, p. 271) unravels this paradox "While full protection of the real wages is viewed as the implicit goal of the Histadrut, the labor confederation realized that self-preservation required an active negotiating posture. […] Partial indexation and negotiations over payment frequency provided labor's leadership with room to maneuver. […] At the same time, the employers and the government benefited from partial linkage, ever hoping that nominal wages might rise less than prices." This observation is important for us and consistent with our theoretical framework: special attention should be paid to the bargaining power of workers' and employers' unions. Incidentally, during the period 1975 to 1979, gross wages increased slightly as a proportion of GDP from 32 to 37% (see Bichler and Nitzan, 2000, p. 292). The same trend is observed for net wages. In terms of the distribution conflict, these numbers indicate that the bargaining power of workers was sufficiently high relative to the market power of firms (even if this latter had strengthened) to cause such a modification in the functional distribution of national income.

[11] A restrictive economic policy was adopted from the devaluation in 1974 until 1977. The policy bore fruit in terms of disinflation, but at the price of economic slowdown and rising unemployment (see Table 3). The government also managed in 1974 to have wage rises through the adjustment mechanisms pushed back a year so as to limit the extent to which the inflationary spiral was sustained.

Graph 2: Changes in the exchange rate (US Dollar/Israeli Currency), November 1974–December 1978



Source: Monthly data, Bank of Israel, series MAT01.MA, present authors' graph

Beyond the deterioration of the current account, a further and perhaps more important consequence for the long term relates to the fourth stage of our generic sequence leading to hyperinflation. This stage highlights the part played by allowance for the change in the foreign exchange rate in domestic behaviour. Now, the behaviour of Israelis changed: "The principal [change observed in the year 1975] was a sharp decline in the second half of the year in total household saving through the institutions, along with an impressive increase in household investment in mutual funds, chiefly those placing a large percentage of their resources in assets pegged to foreign currency. These developments attest to the great importance the public attached this year to linking its savings to the foreign exchange rate (reflected in the steep price rise of securities linked to and/or traded in foreign currency), as well as the diminished attraction (especially in the second half of the year) of saving linked to the cost-of-living index" (*Bank of Israel Annual Report*, 1975, pp. 393-4). From then on, when confronted with higher inflation, depreciation of the domestic currency, and deterioration of foreign accounts, Israelis sought, if not to replace assets in domestic currency by assets in foreign currency, at least to index the financial assets held on the change in the foreign exchange rate. That involved both expecting further devaluation of the Israeli lira and weakening of the store-of-value function of the domestic currency to the benefit of foreign currencies. Clearly, the Israeli economy then entered "a high-inflation regime" in the terms of Carvalho (see section 1). If reference is made to our

causal sequence, the nature of the inflation process changes because of the greater sensitivity to exchange rate movements.

This interpretation is consistent with this other excerpt from the B.O.I. annual report (1975, p. 346): "The very aggravation of the balance of payments problem – the most striking manifestation of which until the November 1974 devaluation was the rapid dwindling of the economy's foreign exchange reserves and the piling up of the short-term foreign currency debts – made the public increasingly aware of the problem and intensified its expectation of a large real devaluation. The existence of such expectations is borne out by the fact that, despite the policy of creeping devaluation carried out since June 1975 and the 10 percent evaluation in September, the gap between the free-market and […] the official rate widened steadily in the second half of the year and the prices of securities linked to the exchange rate rose precipitously." The growing importance of foreign exchange for financial behaviour proves that the store-of-value function of the domestic currency was gradually eroded by the dollar – behaviour that was favoured by the modification of the foreign exchange policy.

The year 1977 witnessed an institutional innovation that was to intensify this dynamic, a true "turnaround" according to Bruno (1989, p. 18). After the historic defeat of the Labour Party in the May legislative elections,[12] monetary policy changed quite clearly: the crawling peg was relinquished and replaced by a less predictable foreign exchange policy than the previous one (the devaluation rates applied were steady, cf. graph 2), characterized by Ilzetski *et al.* (2017) as "freely falling/managed floating". The changes in the foreign exchange rate were from then on more bumpy (cf. graph 2) and devaluation in the order of 46 per cent was observed in October 1977.

Above all, foreign exchange restrictions were lifted and deposits in the domestic currency could be protected against exchange rate changes[13] in accounts that were referred to by their

[12] This was the first time since the creation of the State of Israel that Labour had not been in government. It was the Likud that won the 1977 elections.

[13] The importance of these reforms also appears in the central bank's 1977 annual report (B.O.I., 1977, p. 388): "The reform of the exchange rate system at the end of October 1977 has many important implications concerning the targets and method of implementing both monetary policy and the government's capital market policy, as well as the structure and development of the money and capital markets.

With the lifting of most of the restrictions on the receipt of foreign currency credit from bank in Israel and abroad and elimination of the limitations on the purchase and holding of foreign currency, the economy is now more open than before to short-term capital movements in the private sector's balance of payments; in addition, there is an increased degree of substitution and greater possibilities for the public to shift between local currency assets and liabilities and those in foreign currency.

The floating of the exchange rate has greatly diminished the Bank of Israel's intervention in the foreign exchange market and altered the dimensions and character of such intervention. Today it is limited to moderating the impact on the exchange rate of short-term random factors affecting the demand and supply of foreign currency. Other changes in the market forces will be mainly reflected in the exchange rate rather than in the economy's foreign exchange reserves (and money base).

acronym PATAM. The nominal value of deposits in the Israeli lira was re-valued further to changes in the exchange rate. Commercial banks were bound to maintain a 100 per cent foreign currency reserve ratio with the central bank for deposits made, while for its part the central bank undertook to provide additional liquidity necessary in the event of devaluation of the lira; see Patinkin (1993, p. 108). This innovation accelerated the monetary substitution of the lira by the U.S. dollar: "In November 1977, the government, seeking to limit demand for US dollars in the wake of the October 28 liberalization, made available to the wider public an asset known as PATAM. The PATAM was a dollar-denominated demand deposit (or short-term time deposit) in an Israeli bank, with a 100% required reserve ratio in foreign currency. According to Bufman and Leiderman (1993), PATAM accounts "provided partial hedging against inflation, and against devaluations, as did government indexed bonds." The expansion of access to PATAM caused a massive currency substitution: Between 1975 and 1980, M1/GDP fell from 13% to 5% and M1/M4 fell from 28% to 12% (Liviatan and Piterman 1986; M4 includes PATAM and tradable foreign currency-indexed bonds). PATAM's share in M2 increased from 40% in October 1977 to 71% in November 1979, while the share of foreign currency denominated deposits in total bank deposits increased from 70% to 84%." (Schiffman *et al.*, 2017, pp. 110-1).

3. From the second oil crisis to 1985: inexorably towards hyperinflation?

3.1. The dollarization of the economy intensifies

At the end of 1978, when the Iranian revolution that was to trigger the second oil crisis was beginning, the Israeli economy appeared to be on track in the generic sequence presented in section 1.

The distribution conflict was historically intense and this was still the case in the late 1970s and early 1980s: the tendency for capital to concentrate continued hand in hand with increased market power of firms (see Nitzan and Bichler, 2000) and workers' bargaining power remained strong (unemployment rates were modest and the trade union power of the Histadrut remained

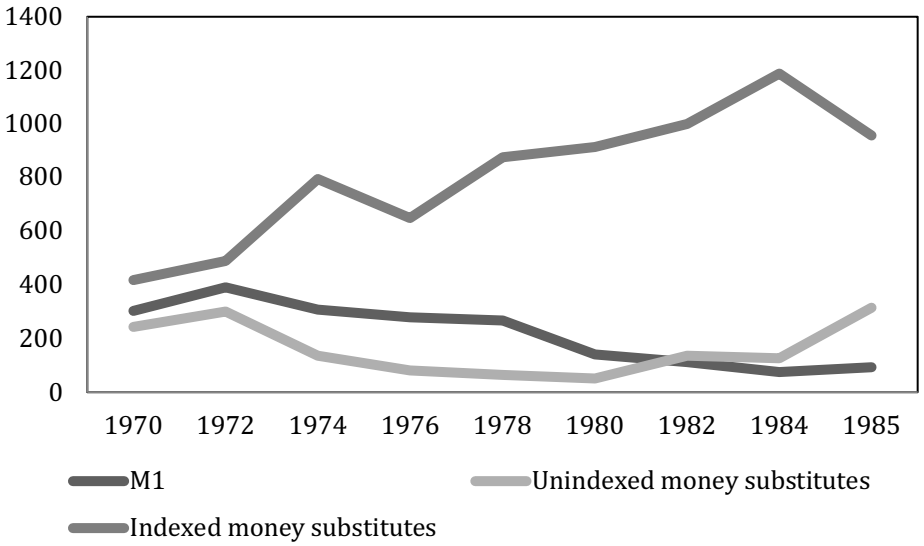
With the unification of exchange rates, which accompanied the floating of the Israeli lira (IL) and liberalization of foreign currency control, the exchange rate on financial transactions was adjusted downward by 47 percent. Besides, the consequent big one-time capital gain and its effect on the composition of the public's asset portfolio this adjustment eliminated the foreign exchange risk which confronted those borrowing foreign currency (mainly for long terms) because of uncertainty over the timing of the change. On the other hand, the floating of the IL has added a new element of risk, which did not exist under the previous exchange rate system."

strong with the union claiming 1.6 million members in 1983, that is, 85 per cent of the country's workforce or one-third of the entire population). This specific configuration of the distributive conflict logically caused a very high level of inflation, but because the bargaining power of workers and the market power of firms were closely matched, the distribution of income remained nearly stable. Bichler and Nitzan (2000, p. 292) report that gross wages were almost stable as a percentage of GDP at around 36 per cent between 1980 and 1984.

Indexation was also particularly well-developed in the Israeli economy. The indexation of wages on prices was not a recent phenomenon, since it preceded even the birth of the Hebrew State (see footnote 6). Fischer (1985) explains, though, that the arrangements for pegging wages to prices changed in the early 1980s: adjustments became quarterly from 1980 and even monthly in 1983. The indexation of wages on the reference of cost of living[14] remained partial although it rose from 70 to 80 per cent in 1979. Indirectly, for indexing practices, the new phenomenon was the growing share of liquid financial investments indexed on the foreign exchange rate or made directly in foreign currencies. Although the indexation of financial assets was not recent (government debt had been pegged to consumer prices since the early 1960s), the practice that was developing marked a stage of rampant dollarization of the economy (see for example Cukierman and Melnick, 2015, p. 5; Offenbacher and Stein, 2003; or Fischer, 1985, who reports that Israelis more generally tended to save dollars in the form of banknotes and that the dollar became the unit of account for many transactions although it was prohibited to display prices in dollars). The domestic money therefore came under strong competition from the U.S. dollar in terms of its store-of-value function, as graph 3 confirms:

[14] The cost of living index rose less quickly than the consumer price index (see Fischer, 1985, p. 69). If we add to this that the indexation although substantial was only partial, it is understandable that real wages could change despite these institutional arrangements (see Table 4).

Graph 3: The dollarization of the Israeli economy, in millions of Shekels (constant prices with 1969 as the base year)



Source: After Shiffer (1986) on Bank of Israel data. M1 refers to currency and non-interest-bearing checking accounts; indexed money substitutes are foreign exchange indexed deposits of Israeli residents in domestic banks and marketable indexed government bonds; unindexed money substitutes are unindexed time deposits, certificates of deposits and unindexed bank of Israel bills.

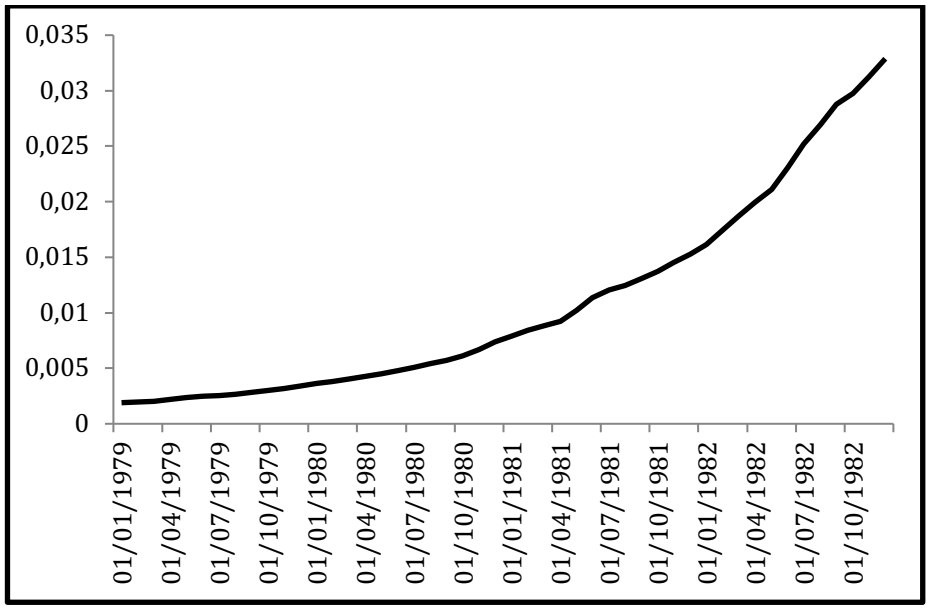
The graph shows that holdings of assets pegged to the dollar (such as PATAMs) rose until 1984 whereas the real monetary mass estimated by the M1 indicator tended to decline.

A final important observation is that the pass-through effect (the passing on of a variation in the foreign exchange rate to domestic prices) was very strong from then on. Cukierman and Melnick (2015) estimated its value econometrically at 1.01 as from 1980. If it is added that, although much reduced, the current deficit was still present ($356 million in 1977 before rising again), the conjunction of all the factors just listed made the Israeli economy sensitive to the slightest negative shock that would affect the possibility of attracting capital to finance the current deficit or would increase it.

3.2. Shifting economic policy and economic fragilities

The impact of the second oil crisis was even greater, Fischer (1985, p. 59) claims, than that of the 1973 crisis. The value of imports of goods (including therefore oil and gas) rose by more than 70 per cent between 1977 and 1980, from $5,483 million to $9,200 million (from the annual balance-of-payments statistics provided by the central bank; the summary of these statistics for the years 1970 to 1985 is in the appendix). So that the current balance should not deteriorate too much, the foreign exchange policy was accommodating and the central bank allowed ever faster devaluation of the lira, as graph 4 shows.

Graph 4: Changes in the exchange rate (US Dollar/Israeli Currency), January 1979–December 1982



Source: Monthly data, Bank of Israel, series MAT01.MA, present authors' graph

At the same time, budget policy was meant to be restrictive (especially through many increases in taxation) and the central bank sought to curb the expansion of credit. These measures forced unemployment up and damped economic growth (see Table 4).

Table 4: Macroeconomic Data, 1979–1986

	GDP growth rate	Unemployment rate	Inflation rate	Real wages
1979	5	2.9	111.4	8.5
1980	3.1	4.8	133.0	-3.4
1981	3.4	5.1	101.5	10.4
1982	0.4	4.5	131.5	-0.4
1983	2.7	5.0	190.7	5.9
1984	1.8	5.9	444.9	-0.4
1985	2.8	6.7	185.2	-9.0
1986	3.3	7.1	19.6	7.8

Sources: *Bank of Israel Annual Report,* various years for GDP Growth rates and Unemployment rates (1982 for 1979–1981, 1986 for 1982–1985 and 1987 for 1986), *Central Bureau of Statistics* (Israel) for inflation, data extracted in September 2017. Series used: Consumer Price Index. For Real Wages: own estimations based on nominal wages given by Bank of Israel, deflated by CPI.

The economic policy conducted in 1979 and 1980 was unpopular and was not defended by the whole of the coalition government led by the Likud (see Reuveny, 1997); the restrictive budget policy was implemented for barely a year (see Fischer, 1985). Although the shekel replaced the Israeli lira in February 1980 (at the rate of 1 to 10), it was clearly the economic policy adopted in late 1982 that was to further accelerate inflation. In September 1982, the Finance Minister announced a plan to guide expectations of inflation along a downward path. To that end, the plan sought to restrict the rise of many prices to 5 per cent per month, which was also to be the pace of variation in the foreign exchange rate. With the objective of securing an annual inflation rate of 80 per cent (the equivalent of 5 per cent per month over the year) while annual inflation had been above 100 per cent since 1979, this policy immediately caused a real rise in the shekel which increased the trade deficit and therefore the current deficit. Inflation did not rise but foreign accounts again deteriorated and were also affected by Israel's war against Lebanon as from 1982. In 1983 the shekel depreciated by 13.7 per cent in August, 9 per cent in September, and then 25.7 per cent in October (subsequently, monthly devaluation rates were in the order of 15 per cent until August 1984). The Finance Minister, who had contemplated disinflation by guiding expectations and controlling prices and foreign exchange, had to step down. On the day he resigned, he even proposed the official dollarization of the Israeli economy, fuelling uncertainty and lack of confidence in the shekel.

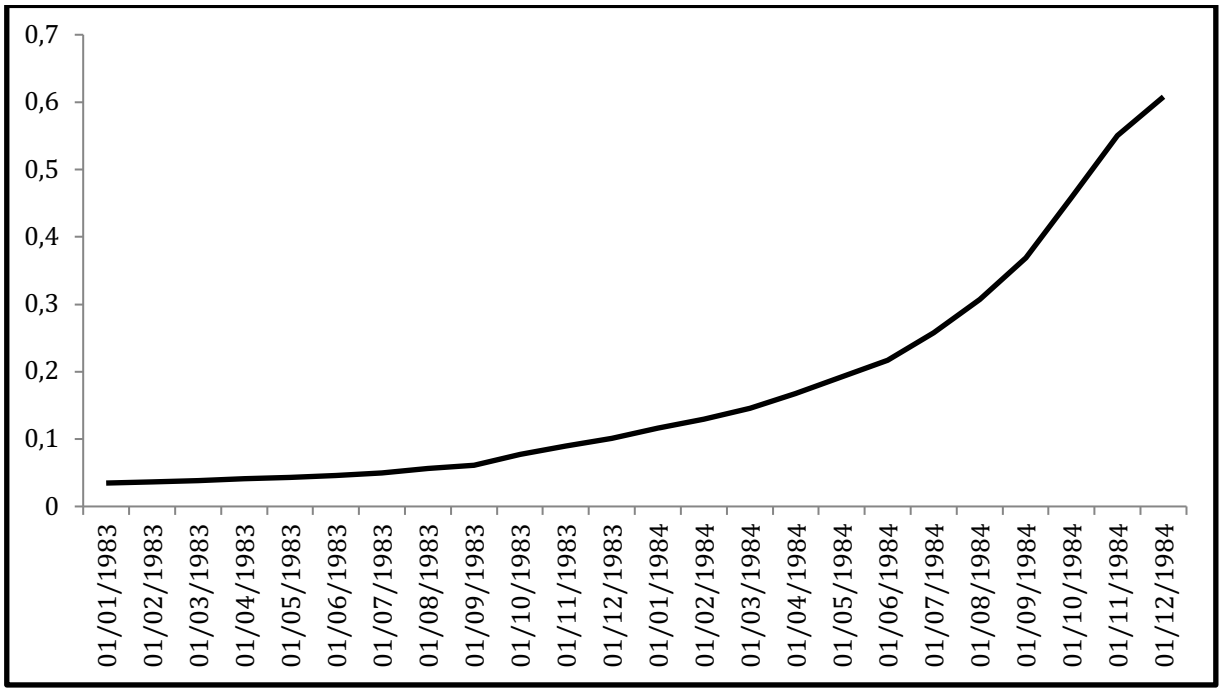
These events were not without their effects; the inflow of capital dried up, causing a previously unknown situation in the course of 1983: foreign exchange reserves fell below the volume of the short-term foreign debt (Bruno, 1986). The situation worsened in 1984 and the first half of 1985. As further proof of how fragile the economy was, October 1983 saw a sudden collapse of share prices on the Tel Aviv stock market (leading to the decision of 6 October to stop trading for 18 days) and a banking crisis. Whereas fears of uncontrolled devaluation of the shekel spread, movement by investors on the domestic financial market was observed as they tried to offload assets denominated in shekels for dollar-denominated assets. Blass and Grossman (1998) report that bank shares represented 60 per cent of the capitalization of the Tel Aviv stock exchange at the time. Israeli banks, based on a universal bank model (Prager, 1996) sought to stop the collapse of share prices by purchasing their own shares, but to no avail. The fall in share prices endangered their solvency, while the share purchases endangered their capacity to provide customers with liquidity. Fearing a run on deposits and a concomitant flight to the dollar, at the end of October, the government and the five largest banks in the country came up with a rescue agreement. The government created a fund that was specifically provided

by it for purchasing shares held by non-financial Israeli agents for up to $6 billion, with the fund being supposed to sell the shares held at a later date.

Yet economic feverishness was not soothed for the next years. Although the trade balance improved with the slowing of economic growth in 1984 and a foreign exchange policy designed to devalue the shekel in real terms, fears of a foreign exchange crisis had not been dispelled. "By contrast, private capital imports fell steeply, and in spite of the improvement in the current account and the rise in public sector capital imports, foreign reserves declined by $600 million […] The contrast between the behavior of the import surplus and private capital movements reflects on the one hand the absence of the large capital inflows mediated by the banking system (mainly foreign residents' deposits) and the capital imports for bank-share support in 1983; and the other, the public's desire to increase the share of foreign currency in its portfolio, a tendency reinforced by the steady deterioration of the balance of payments in 1981-1983, by doubts regarding the government's willingness to deal with the problem by making budget cuts, and by the consequent concern about possible government measures to reduce the real value of financial assets." (Bank of Israel Annual Report, 1985, pp. 86-89).

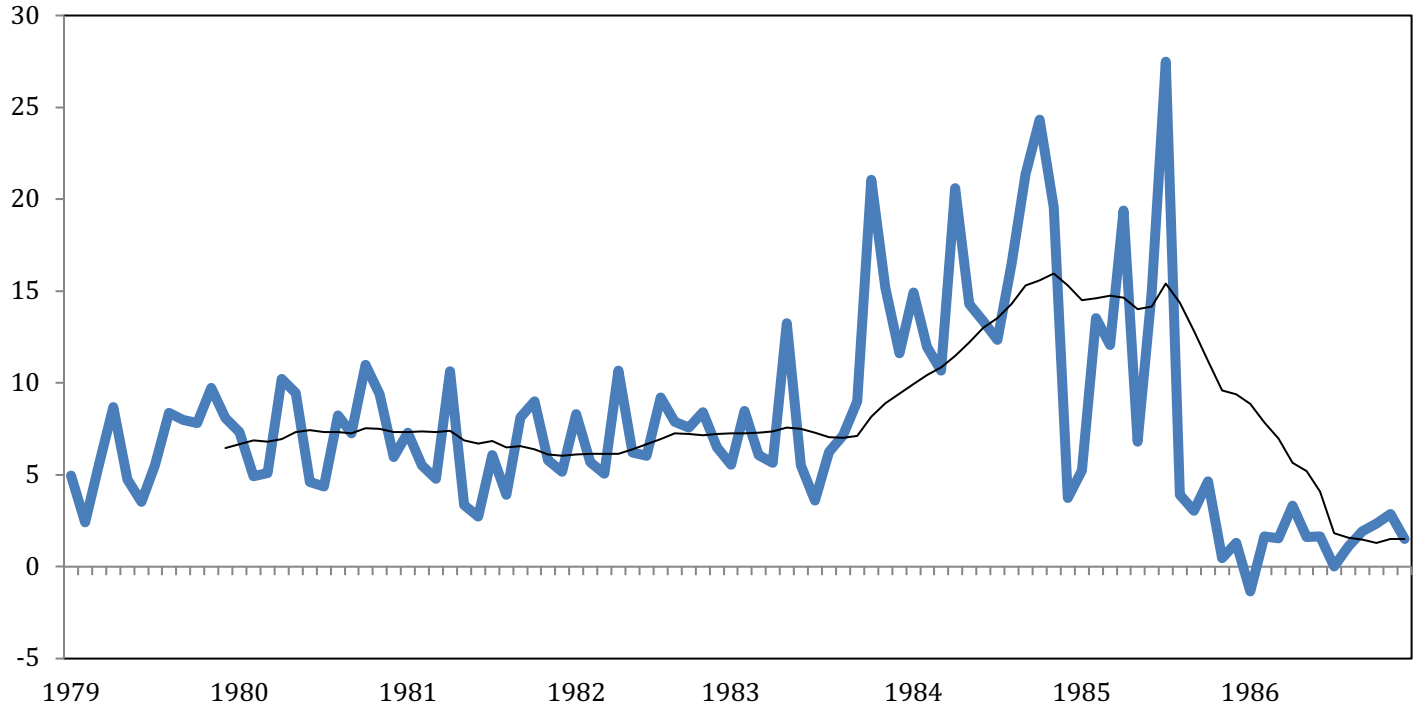
In the face of these difficulties, the domestic currency depreciated ever faster (see graph 5) and the pace of inflation quickened after having been comparatively steady from 1979 to 1982. As shown by graph 6, the monthly inflation rate increased from October 1983 onward. The banking crisis and the impossibility of stabilizing the exchange rate led to a change in domestic agents' behaviour. Whereas Sargent and Zeira (2008) consider that this "episode presents a particularly clear example of the 'unpleasant monetarist arithmetic' of Sargent and Wallace (1981), according to which an anticipated future monetary expansion triggers an immediate rise in inflation coming from rational expectations and a negative dependence of money demand on expected inflation", for reasons to be explained later we prefer to identify here the key role played in a hyperinflationary dynamic by exchange-rate anticipations and by self-fulfilling behaviours.

Graph 5: Changes in the exchange rate (US Dollar/Israeli Currency), January 1983–December 1984



Source: Monthly data, Bank of Israel, series MAT01.MA, present authors' graph

Graph 6: Monthly inflation rates, 1979–1986



Source: *Central Bureau of Statistics* (Israel), data extracted in September 2017. Series used: Consumer Price Index, with trend curve added (moving average over 12 periods).
Note: The tendency for inflation to strengthen over the period is also found when using annual inflation rates (see Table 4).

In the course of 1984 fears of a monetary collapse through a hyperinflationary episode ran high. In the legislative elections of July 1984, the electoral campaign focused on two themes: economic issues and the essential resolution of the Lebanese crisis. Labour led by S. Peres became the country's leading party but could not govern alone; a government of national union was organized involving the two main historical political organizations, the Labour Party and the Likud, (who even agreed on a two-year rotation of Prime Minister and Finance Minister) together with six small political groups with members of the Knesset. Although the economic policy showed no real change in 1984 and although intervention interest rates became positive in real terms (the cycle of devaluations fuelling higher inflation continuing),[15] a political consensus emerged for introducing an ambitious stabilization plan to be put in place in mid-1985.

4. How can the success of the stabilization plan be explained?

4.1. The major features of the stabilization plan

The plan was a novel one especially in that it aimed to solve the balance-of-payments crisis and the inflationary crisis simultaneously. Previous plans had not addressed both aspects at once. The Israeli stabilization plan took effect on 1 July 1985. Like other stabilization schemes designed to counter a high inflationary dynamic (the *Austral* plan adopted the same year in Argentina or the Brazilian *Real* plan of 1994), the Israeli plan has sometimes been termed "heterodox" in the literature (see for example Bruno *et al.*, 1988). This does not mean that it was largely inspired by economists who were not part of the mainstream. The term means simply that although it comprised traditional features of an austerity plan (budget policy like monetary policy became more restrictive), the plan also included less "orthodox" factors

[15] The fact that monthly inflation exceeded 20 per cent in September and October 1984 pushed the newly formed government to put in place a first stabilization plan: this consisted in reducing the automatic adjustment of wages to prices, freezing the prices of many goods and services, imposing price controls, and finally freezing the nominal amounts of taxes. The plan failed to break the inflationary spiral because of the depreciation of the shekel and the consequent increase in costs. Moreover, the tripartite agreements (government, the Histadrut, and employers organizations) were only partially enforced (Cukierman, 1988) and anyway were valid only from November 1984 to January 1985. The *Bank of Israel* acknowledged retrospectively in its 1985 annual report that it was apparent from the beginning of 1985 that the plan had failed because of anticipation of new devaluations: "[The economic deterioration], reflected in the running down of international reserves and a greater resort to short-term liabilities, was caused by speculative foreign currency purchases by the public from the Bank of Israel. The anticipation of a 'corrective' economic plan, which would include a large devaluation and perhaps the impairment of financial assets, spurred the public to step up its purchases of foreign currency" (BOI, 1985, pp. 3-4).

requiring market intervention. Thus prices were frozen and price controls put in place, nominal exchange rate was stabilized, and institutionalized indexation mechanisms were dismantled.

In the Israeli case, budget policy was indeed restrictive: in 1985 and 1986 public spending was cut by the equivalent of 5 points of GDP and fiscal takings raised by 4 points. After running a structural primary public deficit for some 20 years or so and that had reached 16.8 per cent of GDP in 1984, the Israeli government came up with a primary surplus as of 1985 estimated at 0.2 per cent of GDP, which was increased in 1986 to 5.8 per cent of GDP (BOI Annual Report, 1986, p. 68).[16] These surpluses made it possible to reduce foreign public debt and restricted the rise in aggregate demand, which was compatible with an improved balance of trade. The restrictive character of budget policy can also be understood by observing that total public spending in terms of GDP was very sharply reduced between 1984 and 1986 as table 5 indicates.

Table 5: Public expenditure as a percentage of GNP

	1980	1981	1982	1983	1984	1985	1986
Total public expenditure	76.0	74.6	72.5	66.0	72.2	70.0	64.7

Source: Bank of Israel Annual Report, various issues

The monetary policy too was restrictive. The intervention rates remained high and positive in real terms. Thus, although the discount window loan rate was positive in real terms in the order of 3 per cent in the first half of 1984, the nominal rate stood at more than 22 per cent over the second half year, leading to a real rate, estimated with the inflation index based on consumer prices, of more than 8 per cent. This real rate was even about 10 per cent at the time the stabilization plan was adopted and was maintained at high levels thereafter (see statistical annexes to the BOI annual reports of 1985 and 1986).

Alongside these traditional measures, others were less common. The government of national union relied on the point that so many Israeli workers were represented by the Histadrut to negotiate the abolition of automatic indexing of wages and ensure a nominal wage freeze as from July 1985 for three months. At the same time, after a possible adjustment limited to 18

[16] The plan was particularly ambitious in these terms: government consumption spending and investment were cut by 25 per cent (and while cuts were not uniform across the ministries they affected all domains including defence, education, and health), production subsidies were cut by 40 per cent, transfers by 10 per cent (family allowances were cut and no longer paid out for the first child in families up to three children), and taxes were raised by 20 per cent on average. The plan also introduced exceptional taxes on capital income or real-estate ownership. For an exhaustive presentation, readers can see the BOI annual reports for 1985 and 1986 which include a chapter on budgetary and fiscal policy.

per cent (corresponding to the rate of devaluation of the shekel before the programme was launched), the prices of many goods were also frozen for a three-month period. Compliance with the price freeze was controlled by an independent commission and the government ensured that the employers' representatives were in agreement. The agreement was therefore based on broad tripartite participation: government, the Histadrut, and business representatives and seemed to have broad public support. This agreement was described in the following way by Reuveny (1997, p. 100): "After extensive consultation, the Histadrut and the business associations agreed to a package wage/price control suggested by the government. In the agreement, the Histadrut agreed to freeze wages for three months, prevent strikes, and accept a short term rise in unemployment which was expected to follow a sharp disinflation. Government and business undertook to minimize job losses and assist unemployed in finding jobs; while government undertook to compensate the poor."

The final key component of the plan was to stabilize foreign exchange. The central bank organized a devaluation of the shekel against the dollar in the order of 18 per cent so as to restore the price competitiveness of the Israeli economy before undertaking to stabilize foreign exchange within a band of 2 per cent fluctuation, which was no longer to vary, centred on the value of $1 for 1.5 shekels. Internally, any new deposits on bank accounts denominated in the national currency but indexed on the foreign exchange rate were prohibited from then on (it was still possible to hold such accounts and make withdrawals).

To avoid hyperinflation, the stabilization plan tackled the driving forces behind inflation (wage and price freezes, foreign exchange freeze) and the mechanisms that sustained it (wage indexation). For it to be successful meant these factors must not be reactivated so that substitution of the domestic currency by the dollar was curbed definitively.

4.2. The key factor to short-term success: an improvement in the balance of payments

Following our causal sequence, it can be observed that to avert hyperinflation, there should be no run on reserves as a consequence of an outright rejection of the shekel. Some commentators emphasized therefore the "credibility" of the plan which was a pre-requisite for its success and was brought about here by the broad support for the measures taken.

From our point of view, for the run not to occur, it was essential that expectations of foreign exchange failing should not be fuelled so that a self-fulfilling mechanism should not be triggered. Two key factors, which are generally minimized, played a decisive part. First, the withdrawal of the Israeli army from southern Lebanon in February 1985 fuelled optimism about a relative normalization of Israel's relations with its neighbours. This hoped-for normalization

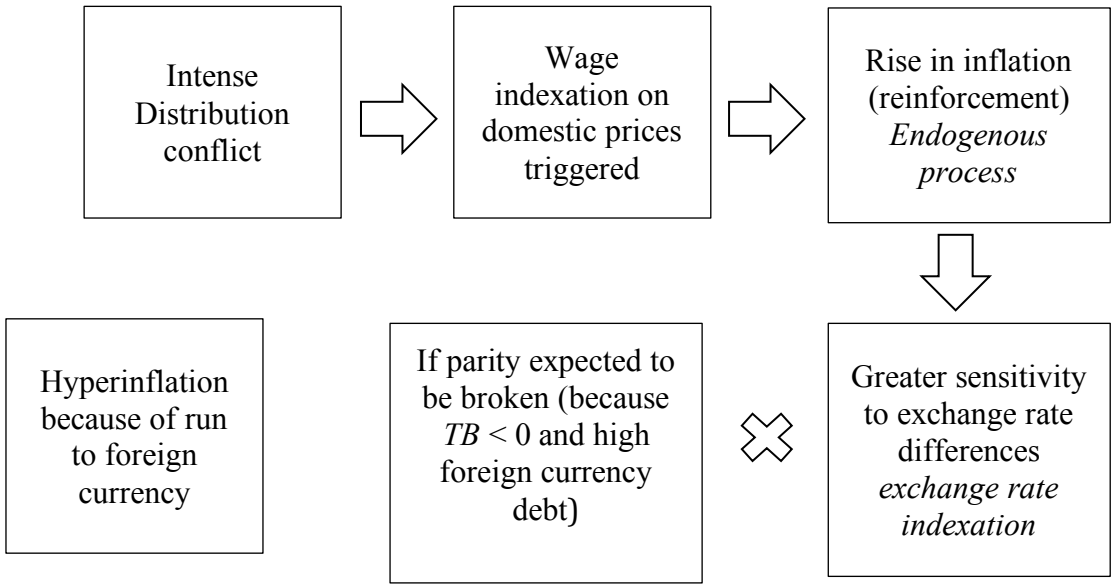
made the budgetary saving measures for military spending credible and by a knock-on effect reduced reliance on imports of weapons. Next and above all, the stabilization programme was largely supported by the United States. This support was materialized by the granting of exceptional financial aid to the tune of $1.5 billion dollars by the U.S. government and the United States relinquishing its claims on the Israeli government. The payment of exceptional aid in two tranches was recorded in the current account in the balance-of-payments statistics (cf. appendix); this aid did not increase foreign debt, on the contrary, it encouraged an increase in all inflows of funds recorded in secondary revenues and through securing a positive current account balance in 1986 (cf. balance-of-payments statistics) and it allowed an improvement in the country's net foreign position which made the risk of a balance-of-payments crisis more remote. These factors were specified in the BOI annual report (1985, p. 89): "Israel's balance of payment improved in 1985: the import surplus and the current-account deficit continued to decline, the foreign debt was reduced, and there was no need to rely on short-term net borrowing to finance the deficit. The balance on current account (the difference between unilateral transfers from abroad and the import surplus) improved by $2.5 billion, following $0.7 in 1984, and for the first time in 30 years, Israel had a surplus on current account – of $1.1 billion.

This improvement was due to two main factors: (a) an increase of $1.6 billion, in U.S. grants, representing in part completion of the shift from loans into grants and in part the special emergency aid of $750 million (the first installment of a total grant of $1.5 billion). As well as improving the balance of payments directly, the increase in U.S. grants-in-aid also increased confidence in the government, thereby reducing demand for imports and foreign assets. (b) A restrictive macro-economic policy which reduced domestic demand relative to GNP and made it possible to reduce the import surplus, while GDP increased by 2.8 percent. This was reflected in the decline of the civilian import surplus (excluding capital services) from $1.5 billion to $0.3 billion (in 1984, the decline was $1.1 billion). At the same time, the relative price of imports and exports rose by, respectively, 7 and 5 percent.

The big improvement in the current account on the one hand reduced the net foreign debt from $19.7 billion to $19.2 billion, and on the other, it eliminated the need to resort to net short-term financing. The country's foreign liquidity position improved: the net current debt, which stood at $0.7 billion at the end of 1984, was liquidated in 1985, most of the improvement showing up in the foreign reserves, which rose from $3.3 billion to $3.8 billion." After inflation peaked at an estimated 27.5 per cent in July 1985, it slowed tremendously (3.9 per cent in August; see graph 11). It is noteworthy that the exchange rate stabilization from summer 1985 (see graph 12) was facilitated by the sharp decline of the dollar against the major currencies

after the Plaza Accord of September 1985. As the Shekel was pegged to the dollar, Israel's competitiveness with the rest of the world was enhanced in real terms.

The final two stages in our causal chain could not occur and hyperinflation was averted:



N.B.: *TB* is the acronym for Trade Balance

In the short run, the ability to deal with the external constraint eliminated the risk of hyperinflation. In a way, it is understandable that the external problems associated with current account deficits are more important than domestic issues associated with distributive conflict and indexation. But we have to keep in mind that the risk of an exchange rate crisis degenerating into hyperinflation assumes, on the one hand, the existence of indexation mechanisms, on the other hand, an ongoing process of dollarization. Both can be induced by a pre-existing high inflation regime caused by a specific development of the distributive conflict. In other words, although hyperinflation is inextricably linked with an exchange rate crisis (the domestic currency is rejected in favour of a foreign currency), not every exchange rate crisis results in hyperinflation.

In the long term, it was important to go back to the previous stages: de-escalating the distribution conflict allowing gradual and lasting dismantling of the indexation mechanisms.

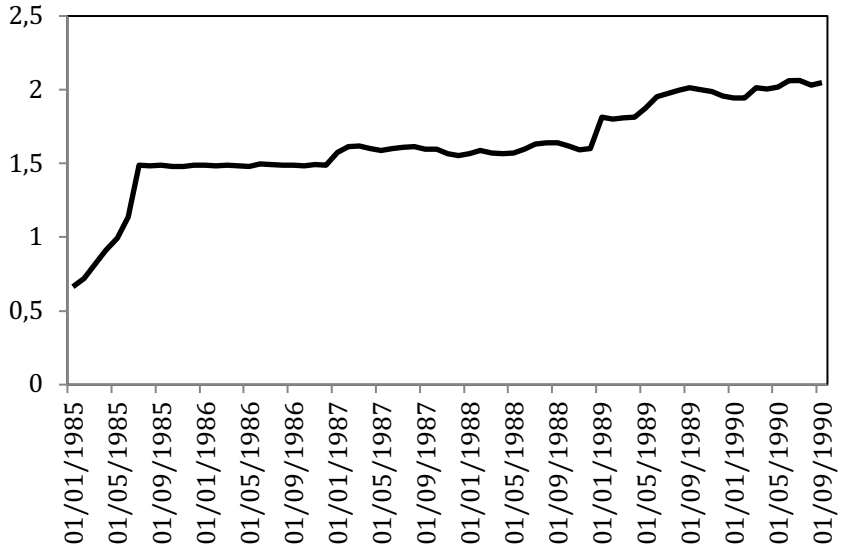
4.3. Longer-term success: a less intense distribution conflict in a context of still close indexation of prices on the foreign exchange rate

Inflation came down at the same time as unemployment went up (see Table 4). Rising unemployment is viewed by post-Keynesians as the cause of a fall in workers' bargaining power. In fact, we observe the increase in unemployment in 1985 went hand in hand with a

decrease in gross wages as a percentage of GDP (see Bichler and Nitzan, 2000, p. 292); these stylized facts are consistent with a decrease in workers' bargaining power.

At the same time, the stabilization of the foreign exchange rate as from August 1985 (graph 7) caused a decline in the market power of domestic firms exposed to international competition; the stabilization of foreign exchange reduces the possibilities for domestic firms to raise their prices without losing market share.

Graph 7: Dollar/shekel exchange rates, January 1985–October 1990



Source: Monthly data, Bank of Israel, series MAT01.MA, present authors' graph

These two factors indicate that the terms of the distribution conflict were modified under the stabilization plan in such a way that the inflation caused by the distribution conflict was reduced. Cukierman and Melnick (2015) report that the effect of subsequent variations in foreign exchange on domestic price dynamics remained very marked. Econometric estimates reveal that the pass-through effect was not significantly different from 1 before the 1990s. This result confirms that the stabilization of foreign exchange was a key factor in the success of a monetary stabilization plan that sought to avoid hyperinflation occurring.

In the long term, the risk of hyperinflation was annihilated because the power of the driving force behind inflation was itself reduced. The stabilization plan of 1985 opened a new era, especially with respect to the bargaining power of workers, which was undermined in the long term. As underlined by Achdut (1996, pp. S10-11): "The unemployment rate jumped from 3% in 1979 to 5% in 1981 and to 7% in 1986. The massive immigration to Israel from the former Soviet Union towards the end of the 1980s sharply increased the size of the labour force,

intensifying the unemployment problem. The unemployment rate peaked at 11% in 1992. […] Since 1985 […] wages eroded as a result of a government policy." Nitzan and Bichler (2000) interpret these events as a regime shift in which labour was "the target". This configuration of the causal sequence cannot lead to hyperinflation.

N.B.: *TB* is the acronym for Trade Balance

Conclusion

This paper has made it possible to characterize the Israeli economic trajectory generating higher inflation over several decades and accompanied by a weakening of the domestic currency which was particularly salient in the mid 1980s. These two phenomena were together likely to lead to hyperinflation, defined as the complete rejection of the domestic currency for the benefit of a foreign currency in a context of a high rise in prices.

The monetary instability of the 1980s took root in the historical and institutional characteristics specific to the Israeli economy: the bargaining power of workers was historically strong (because of the low unemployment rate and strong trade unionism), economic development was rapid, the economy was structurally dependent on imports and vulnerable to outside shocks. Moreover, it has been observed that the market power of firms increased during the 1970s due to the militarization of the economy and the development of an oligopolistic financial sector. We have emphasized the importance of the mechanisms for indexing wages on prices (even before the creation of the State of Israel itself) but also of financial assets (including liquid assets) on the variation of the exchange rate of the domestic currency (a phenomenon that was particularly noticeable against the dollar as from 1977). These

characteristics were articulated with the typical sequence of a process leading to hyperinflation developed by post-Keynesian authors. In a tradition begun by Robinson, they show the cumulative importance of the distribution conflict, indexation mechanisms, and foreign constraints, the latter being liable to feed expectations that the domestic currency would depreciate.

The article indicates that although Israel experienced an inflationary trajectory that squared with the generic sequence proposed leading to hyperinflation, it benefitted from an improvement in its current balance in the mid 1980s at the time an ambitious monetary stabilization plan was launched. Through the improvement of the current balance, largely brought about by U.S. government intervention, a massive flight from the shekel to the dollar was averted and hyperinflation was averted by the same token. In the longer term, the foreign exchange stabilization policy was accompanied by an increase in unemployment and a real rise in the domestic currency limiting the distribution conflict, weakening the driving force of inflation, and lastingly removing the possible occurrence of a hyperinflationary episode. Gradually, this more weakly inflationary regime made it possible to dismantle the indexation mechanisms. The analysis shows that a country on the brink of hyperinflation should be able to improve its foreign exchange position in order to avert the flight from the domestic currency to a foreign currency. This challenge is very often insuperable for an economy that does not benefit from sufficient international assistance and in the context of an international monetary system marked by foreign exchange instability and free movement of capital globally.

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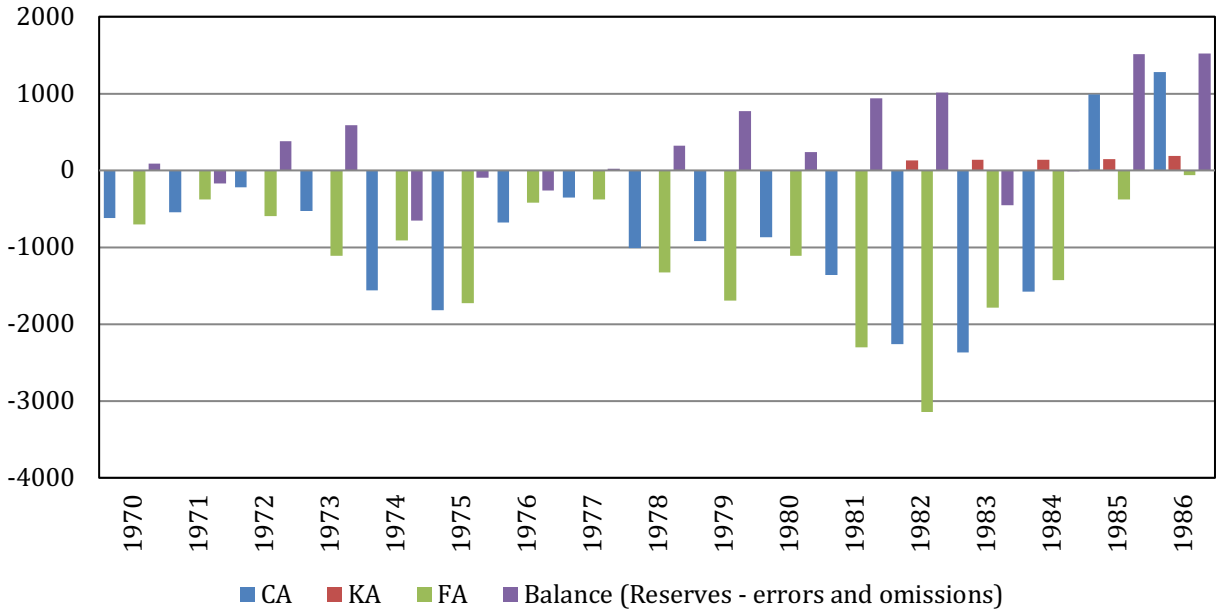
Annex: Summary of Israel's balance-of-payments statistics (U.S.$ millions), 1970–1986



Source: Data available on-line on the IMF website. *IMF Data Warehouse*, data extracted 13 September 2017
Read as: CA refers to the current account balance, KA to the capital account balance, and FA to the financial transactions account balance. For the current account, a positive balance means the current balance is in surplus. For the financial transactions account, a negative balance indicates the period is characterized by net lending, and a positive balance by net borrowing. Accordingly by definition any current account balance is equal to the financial transactions account balance plus the variation in foreign exchange reserves and errors and omissions. A positive "balance" therefore indicates a rise in the international means of payment available to the domestic economy.